

# NEMATYC 2017

## 43<sup>rd</sup> Annual Meeting

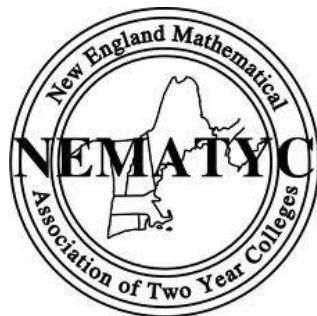
### *Mathematics & Sustainability*

*April 28-29, 2017*

*Bristol Community College*



**BCC**  
BRISTOL COMMUNITY COLLEGE



# CONFERENCE SCHEDULE

Friday, April 28, 2017

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**2:30 – 5:00 pm Registration, Refreshments, and Vendor Displays** *G Building*

**2:30 – 2:45 pm Welcoming Remarks** *G Building*

**3:15 – 5:00 pm Presentations** *L Building*

**6:30 – 8:30 pm Social Time and Appetizers**

*The Cove Restaurant*

*392 Davol St, Fall River, MA 02720, (508) 672-4540*

Saturday, April 29, 2017

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**8:30 am – 12:00 pm Registration** *G Building*

**8:30 – 8:50 am Welcoming Remarks and Continental Breakfast**  
*G Building*

**9:00 – 11:45 am Presentations** *L Building*

**11:45 am – 12:15 pm Dedicated Exhibit Time** *G Building*

**12:15 – 1:45 pm Lunch, Awards, and Keynote Speaker** *G Building*

**2:00 – 3:45 pm Presentations** *L Building*

**4:00 – 5:00 pm Business Meeting** (*Door Prizes*) *Room L 101*

## KEYNOTE SPEAKER



**Dr. Baylor Fox-Kemper, Brown University**

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### **Anthropogenic Climate Change is Not Yes or No, It's How Much?**

When the media discusses opinions on human-induced (anthropogenic) climate change, snippets of responses are typically what is taken to sum up: "hoax", "defining issue of our time", "needs more study", "subject to more debate", "I'm not an expert in this field", "overwhelming consensus". As a climate scientist, I find all of these descriptions lack a numerate appreciation of the problem. As educators, we need to teach not just that humans might influence the climate system, but what the evidence is including especially how large the effect is compared to other variability and how our decisions can influence the outcome. In this talk, I will discuss how we observe the climate system, how it is modeled and projected into the future, and where are the primary uncertainties and their size. Along the way, I will accentuate the mathematics needed to appreciate these results as a scientist, student, and informed citizen.

### **Biographical Highlights**

In January, 2013, I joined what is now the Department of Earth, Environmental, and Planetary Sciences at Brown University. I work mostly within the Climate and Environment Group and the Institute at Brown for Environment & Society (IBES). From 2007-2012, I was an assistant professor at the University of Colorado Boulder. I taught in Atmospheric and Oceanic Sciences and was an affiliate of the Department of Applied Mathematics. Before Boulder, I had postdoctoral positions at MIT and Princeton. My Ph.D. is from the MIT/WHOI Joint Program in Oceanography. I have won some awards, including the American Geophysical Union's Early Career Award and an NSF CAREER award.

# PRESENTATIONS

Friday, April 28<sup>th</sup>

3:15 pm- 4:00 pm

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## **Session 1: How Do We Engage Future Mathematics Majors?**

Alex Cotter, Massasoit Community College

Room L 105

With developmental mathematics reform dominating the time and energy of mathematics departments, one of the most under-served populations at community colleges may be students who are mathematically interested and talented. This session is intended to be a round table discussion focused on gathering ideas of what community colleges can do to engage future mathematics (and related) majors inside and outside of the classroom.

## **Session 2: Understanding Student Engagement: A Digital Perspective**

Jonathan McDonald, Cengage Learning

Room L 106

Over the last few years we have been looking at courseware with a view of student motivations and engagement. As students' use of technology is changed by the devices they use and the standards of common user experiences, we are looking at how they engage with technology for learning in mathematics. In this presentation, we will review factors of student engagement and examine how they can be applied in digital learning experiences.

## **Session 3: Personal Connections in Emporium Developmental Math**

Autumn Alden, Bristol Community College

Room L 107

When I went from teaching face-to-face traditional lecture classes with lots of whole-class discussions to teaching emporium style self-paced developmental math classes where students work independently, I lost a good deal of student connection. It was easy to let students work without much interference from me, especially if they were progressing adequately. In this workshop, I will show you the current

communication log I use and let you create your own communication log to take home. I will give a sample of the questions I ask students, talk about the problems that can be addressed, and the benefits from using a journal in class. I will talk about my experience with communication logs last semester and present some data on student success and retention.

Friday, April 28<sup>th</sup>

3:15 pm- 4:45 pm

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**Session 4: Innovative Strategy: Calculate Probability for Complementary Events Logically**

Eiki Satake, Emerson College

Room L 104

Next to the topics in Conditional Probability and Bayes' Rule, statistical novices often have some difficulties in understanding the underlying logic and mathematics behind the formula for calculating complementary events. Mainly, it is due to the fact that there are very few textbooks that explain the concepts logically. This presentation provides a clearer explanation of calculation of probability for complementary events in a more logical manner so that the statistical novices can easily grasp the fundamental concepts of the topic. The primary objective of the presentation is to apply both deductive and inductive reasoning to solve the problems most effectively.

Friday, April 28<sup>th</sup>

4:15 pm- 5:00 pm

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**Session 5: A Program Evaluation of a Redesigned Developmental Mathematics Program**

Raina Eckhardt, Manchester Community College

Room L 105

A lack of persistence through the developmental mathematics program at Manchester Community College in New Hampshire has created a roadblock to degree and certificate completion. This research is a mixed-methods program evaluation of a newly redesigned accelerated developmental math program during its second semester in the spring of 2016. The purpose of this evaluation was to assess the influence this

program had on students' persistence by investigating students' academic achievement, mindset, and affect that emerged. Findings from this evaluation informed stakeholders on further constructive modifications to the program with respect to meeting the learning needs of students at the college.

### **Session 6: Flipping Classroom in Your Pocket**

Fei Xue, University of Hartford

Room L 106

In this session, we will introduce how to use mobile equipment to make a traditional classroom flipping friendly. The equipment we will discuss include mini WiFi projector, iPad, and Plickers (student respond system) which fit in your pockets! Moreover, we will present a departmental flipping project at the University of Hartford and some study results.

### **Session 7: Equality for Adjuncts**

John McColgan, Roxbury Community College

Room L 107

Adjuncts teach a majority of classes at community colleges for a fraction of the pay. One of the hurdles we have to cross to address this is to figure out how much full time faculty get paid per credit. Find out how the MCCC Bargaining team attempted to do so using the Day Contract and linear regression.

Saturday, April 29<sup>th</sup>

9:00 am- 9:45 am

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### **Session 8: Our Experiences Using Open Educational Resources**

Kim Ward, Eastern Connecticut State University

Joseph Mathey, University of Saint Joseph

Room L 105

While it is a known fact that students have difficulty with the study of mathematics, hidden issues can arise before the start of a math class. One issue is related to purchasing course materials such as textbooks, access codes for course management systems and graphing calculators. Many institutions are now turning to using open educational resources (OER) as a means of removing one of the many barriers students face

when seeking a degree in higher education. We will share with you our experiences using OER, such as MyOpenMath and OpenStax, to teach Precalculus at our respective institutions.

### **Session 9: Using You-Tube for Open Educational Resources**

Dan Avedikian, Bristol Community College

Room L 107

This presentation is about open educational resources (OER) using my school's blackboard space and you-tube. There is no book at all for classes taught with this system of OER. Detailed class notes are available on the school's blackboard space along with a complete set of homework exercises. Each exercise has a link at the end of the problem that says "see solution to this problem". When students click on the link, they see a video of their teacher at a white board doing the complete solution for that problem. The homework exercises tend to be about the local region and Bristol Community College. This makes the homework a bit more interesting to the students than the homework that is found in a traditional textbook. In addition to not having to buy a book, this approach to OER has the added benefit of complete 24/7 access to detailed solutions to all of the homework.

Saturday, April 29<sup>th</sup>

10:00 am- 10:45 am

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### **Session 10: Using Open Resources and Technology in Online Math and Physics Tutoring**

Adam Hartman, Johnson and Wales University

Room L 105

Mathematics and physics pose significant challenges to students taking these classes at the college level for the first time. Many students, especially first generation college students, do not cover higher level math or physics in their high school curricula, and often benefit from additional tutoring. The more abstract the subject becomes, the more useful a variety of resources -- quantitative, visual, and interactive -- become in transmitting complicated ideas.

This presentation shows how free cloud-based resources can be efficiently to integrated into online tutoring, aimed at students who

either cannot attend traditional office hours, or who need additional help in understanding abstract concepts.

### **Session 11: Creating the Right Path for Your Students Using Math Technology**

Jay Jenkins, **Pearson Education**

Room L 106

This workshop will present new functionality, approaches, and features that will help you create, edit, and implement successful courses for STEM and NON-STEM Pathways. Along the way, we will discuss features that can encourage retention and success through personalized and Mastery-Based learning. We will also spend time going over exciting new features for interactivity in the classroom, Adaptive Practice, and Mathspace assignments that emphasize the steps and process of mathematical questions.

### **Session 12: STARS and Nonparametric Statistics**

Barry Woods, Unity College

Room L 107

Any college or university in the world can register to begin tracking, managing and sharing information about its sustainability efforts using STARS (Sustainability Tracking, Assessment & Rating System™), part of the Association for the Advancement of Sustainability in Higher Education (AASHE) program. Institutions earn points toward a STARS Bronze, Silver, Gold or Platinum rating, or to earn recognition as a STARS Reporter. Since the Bronze, Silver, Gold or Platinum ratings are ordinal data, this presentation will look at nonparametric statistics using Excel.



Saturday, April 29<sup>th</sup>

11:00 am- 11:45 am

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**Session 13: Better, Faster, Cheaper – Leveraging OER & Adaptive Learning to Improve Outcomes**

Shelly Tomlin, Knewton

Room L 105

In a single classroom, an educator can have any number of students who need extra support, those who may need challenging content, and others who simply need more time to complete assignments. Hear how adaptive instruction combined with curated Open Educational Resources (OER) helps students gain mastery of every concept through real-time individualized instruction, just-in-time scaffolding and cross-course discipline interventions in Math. In this interactive session, instructors will discuss how they implemented, their goals, successes and challenges. The audience will: 1) Understand how adaptive instruction provides each student with a personalized learning path & helps struggling students master pre-requisite concepts across disciplines. 2) Learn how to use data to inform instruction 3) Gain insights to how curated OER lowers costs of course materials 4) Receive tangible tips on how to integrate adaptive technology & to engage students.

**Session 14: Algebra – Taking Shape**

Natalya Vinogradova, Plymouth State University

Room L 106

Do your students struggle with algebraic formulas and procedures? Let's get together to explore how making connections between numerical fluency, precise use of mathematical language, and geometric representations can help make sense of algebraic symbols. Strategies and activities discussed in this session are classroom tested and ready to use.

**Session 15: Mathematics for Cybersecurity**

Jillian McLeod, U.S. Coast Guard Academy

Room L 107

Information security is a universal concern, but just how do we protect sensitive information from an unintended recipient in the age of the modern computer? Through basic examples, this talk aims to highlight some of the fundamental mathematical ideas and procedures behind historical and contemporary information security schemes. This presentation is intended as an introduction to some of the mathematics for cybersecurity.

Saturday, April 29<sup>th</sup>

2:00 pm- 2:45 pm

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**Session 16: Sustainability in College Mathematics: A Framework to Target Waste Reduction**

Dena Feldman, Framingham State University

Room L 105

Declining funding for Massachusetts public community colleges continues to stress the resources available for – and the quality of education of – math departments at these institutions. Consequently, it is valuable to explore opportunities to optimize the use of these department resources.

In this talk, we propose a framework for sustainability in the context of math education at the post-secondary level, and discuss methodologies for reducing waste for faculty, department, and institution. We also identify some of the disadvantages of these methodologies and various challenges inherent in “math classroom waste-reduction,” in addition to fostering further dialogue with the audience about these concerns.

**Session 17: Basketball's Sustainability: Ranking the Great Boston Celtics Players!**

Steve Krevisky, Middlesex Community College

Room L 106

Who are the greatest players in Boston Celtics' history? Would you vote for Bill Russell, Larry Bird, John Havlicek, or other greats? We will look at various statistical criteria to rank them, including championships won, points per game, rebounds per game, assists per game, and other quantitative measures. Come join the discussion, and bring your calculator! Intended for teachers of algebra, statistics, or quantitative literacy.

Saturday, April 29<sup>th</sup>

2:00 pm- 3:30 pm

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**Session 18: Carnegie Math Pathways: Equity Lessons from the Transformation of Math Learning**

Milena Cuellar, LaGuardia Community College, CUNY

Andre Freeman, Capital Community College

Room L 107

The Carnegie Math Pathways has been helping students to complete developmental math and be able to reach higher academic achievement levels. Over 60 colleges (the majority of which are two-year institutions) implement Quantway and Statway, and, just in the last academic year, over 6000 students have participated in these course designed to transform the mathematics learning experiences for all students. This session will engage participants around "big ideas" for improving students' persistence and success in developmental mathematics and how Statway and Quantway address these ideas and result in greater success and a narrowing of the achievement gap. In addition, we will share suggestions of ways to address equity and achievement more intentionally within the various components of the Carnegie Math Pathways, including how the Pathways' organization as a networked improvement community critically supports collective learning and action and is working collaboratively to support more equitable learning and outcomes in developmental math. During this session, we

will encourage participants to consider approaches to addressing similar goals at their own institutions by exploring a couple of colleges' implementation of Statway as case studies for transforming learning and addressing equity. The session will close with an opportunity for Q&A.

**Session 19: Data Science: The First Two Years**

Adriano Marzullo, Gary Davis, Donghui Yan

University of Massachusetts Dartmouth

Room L 104

We will discuss the first two years of the undergraduate BS, and the graduate MS, in Data Science at the University of Massachusetts Dartmouth. Additionally, we will discuss the possibilities of Community College – University of Massachusetts Dartmouth collaboration in the undergraduate BS in Data Science. Collaboration may include joint teaching of courses, rotating teaching of courses, design of new courses - especially with other Departments (English, political Science Sociology, for example).

Saturday, April 29<sup>th</sup>

3:00 pm- 3:45 pm

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**Session 20: Teaching the Millennials**

Magdalena Luca, Massachusetts College of Pharmacy Room L 105

Many of us have been teaching mathematics for years — some of us maybe for decades. Our students continuously change, but, like me, you might have noticed some significant changes in the last 10 years. That's because we are teaching Millennials, students born after 1980. In this presentation, I will examine research-based recommendations for successfully engaging Millennials, share my personal challenges in teaching this group of students, and talk about solutions I have found. As always, I would like to involve all participants in a discussion about teaching math to Millennials, including any issues and/or suggestions that are "sustainable" for students and professors.

## **Session 21: Sustaining AMATYC's New ANets**

Judy King, New Hampshire Technical Institute-Concord's Community College,

Steve Krevisky, Middlesex Community College

Christine Mirbaha, Community College of Baltimore County

Fari Sami, Hartford Community College

Room L 106

To sustain AMATYC, our parent organization requires members. ANets (AMATYC Networks) are AMATYC's newest way for you to get involved in areas that interest you. They require only the time you choose to offer. Currently there are four: Adjunct Faculty Issues, International Education, Math for Liberal Arts, and Department/Division Issues. Come join this session to find your ANet. Share your ideas, get involved, let your voice be heard. Sustain AMATYC so it can sustain you.

Please visit [Tinyurl.com/nematyc17eval](https://tinyurl.com/nematyc17eval) to complete an evaluation of the 2017 NEMATYC Conference.

# THANK YOU!

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**Bristol Community College** for the donations and support

**Pearson Education** for sponsoring the Friday night social time

**McGraw-Hill** for sponsoring the Saturday breakfast

Our Exhibitors:

**Academx Publishing Services**

**American Mathematical Society**

**Carnegie**

**Cengage**

**GraphLock**

**Knewton**

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**[mymathlab.com](http://mymathlab.com)**

# TECHNOLOGY INFORMATION

## Accessing the BCC Network

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### LAPTOPS:

For laptops use the “BCC-WIRELESS” network. Once you join your browser will direct you to a log in screen. Be sure to register yourself with the “Guest Clients”.

It will ask for your name, a phone number, and a reason for visit. Once you complete this form, you will be on the BCC network.

### TABLETS & CELLULAR DEVICES:

Choose the “BCC-WIRELESS” network in your device’s wireless network settings.

Once you join, a window will open prompting you to join the network. Tap the “Accept” button, then “Next”.

Choose “Guest Clients” option (not BCC Faculty/Staff).

Enter your name, phone number, and reason for visit. Then tap the “Download” button.

You will need to wait until the entire package downloads. Once complete, the window should close on its own.

You should now be able to access the BCC wireless network.

## To Use Desktops Around Campus

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**Username:** NEMATYC

**Password:** Mathematics@777!