

# Math & Science Education Center

APPALACHIAN STATE UNIVERSITY

MSEC Newsletter

Fall 2017

## 2017-18 SCIENCE SEMINARS

The theme of this year's science seminar series is *Ecoliteracy and a Sustainable Future: A Seminar Series Aimed at Increasing Knowledge of the Ecosystem and Exploring Ways to Protect and Preserve It*.

All seminars are on Thursday nights in Appalachian State University's Reich College of Education building, room 124C from 6 p.m. – 8 p.m. with refreshments at 6 p.m. Parking on campus is free after 5 p.m. with the most convenient parking for the seminars being in the Library Parking Deck near the college. The seminars are free, open to everyone, and offer license renewal credits (0.2 per seminar) to teachers. The spring seminar is part of the North Carolina Science Festival that will take place during the month of April, 2018. The schedule for the series is:

**Sept. 14, 2017: Suzanna Brauer (Biology) “Tipping Point: from Carbon Storage to Carbon Emissions in Wetlands.”** Discussion of the important role of wetlands in storing carbon and how they also emit carbon: Cold temperatures and saturation are required to store carbon. As wetlands warm, the balance is predicted to tip and they will likely emit more carbon than they store.

**Sept. 21, 2017: Lee Ball (University Sustainability) “Ecophilic Design: A Solution during Troubled Times.”** Ecophilic design uses ecological systems as model and inspiration for sustainability innovation within the built environment and beyond.

**Sept. 28, 2017: Sarah Evans (Geology) “Can’t Take the Heat? Water Resources in Warming Cold Regions.”** The effects of atmospheric warming on groundwater and surface water flow in the Arctic.

**Oct. 5, 2017: Billy Armstrong (Geology) “How Glaciers Respond to Climate Change.”** Different glaciers respond differently to climate change due to their shapes and settings. I explore the physical mechanisms that underlie these differences and examine their effects on the health of glaciers in a changing global climate.

**Oct. 26, 2017: Howie Neufeld (Biology) “The Future of Human Civilization: Climate Change, Population Growth and the Prospects for Sustainability.”** Population growth, which drives most, if not all of our environmental problems, was not even discussed at the recent Paris Climate Agreement, presumably because it is politically too sensitive. Continued population growth will make it harder, if not impossible, to meet global climate goals, and we have to admit that an ever-growing population is in no way sustainable in the long-term.

**Nov. 16, 2017: Dan Caton (Physics and Astronomy) “Eco Aspects of Mitigating Light Pollution.”** Preserving the night sky and reducing the use of electricity.

**April 19, 2018: Marty Root (Nutrition and Health Care Management) “GMO: Get More Organics?”** Misconceptions of genetically modified organisms and organics and the role they can or cannot play in the sustainability of the world food supply.

## KEEP UP WITH MSEC ACTIVITIES

Current and earlier newsletters are available at [www.msec.appstate.edu](http://www.msec.appstate.edu). In addition, print copies of the newsletter are distributed to mathematics, science, and some other departments on campus and are available at the MSEC for visitors and participants in Center programs. If you are a K-12 teacher or administrator, we invite you to add your name to our Google Group (formerly listserv) by sending your email address to Leah McManus ([mcmanusld@appstate.edu](mailto:mcmanusld@appstate.edu)). We have formerly had separate listservs for elementary, middle and high school, but we think it is more useful to have one Google Group that combines all three levels. We are careful not to bombard you with notices. We use the Google Group to let you know about workshop opportunities, seminars, and other items of interest. If you belong to the Google Group and change addresses, please let us know so that we can update your information. In addition to information in the newsletter and information sent to Google Group members, the MSEC website always has the most up-to-date information on Center activities.

## **MATHEMATICS EDUCATION LEADERSHIP TRAINING (MELT) PROGRAM**

Can you believe it? MELT has grown again! Under the guidance of its Director, Michael Bossé, the 2017 MELT Program offered 13 week-long Summer Institutes providing professional development to K-12 teachers. Among others, these Institutes included the following, Math 1, 2, & 3, Integrating Technology into Mathematics (6-12), Numbers, Operations, & Meaning (K-5 & 6-8), STEM Leadership (6-12), Literacy in Mathematics (K-8), Algebraic Thinking, Algebra, & Functions (K-5 & 6-8), Fractions, Ratios, Proportions & Geometry (K-5 & 6-8). 175 participants attended MELT Institutes this summer! This was record high participation, beating last year's record high of 146 and the previous record of 121. This establishes even higher goals for next year. To meet the needs of teachers and address state and national political and educational movements, MELT Summer Institutes change offerings and curricula every year. New MELT Institutes in Literacy and STEM Leadership continue to flourish. And, next year, plans are in place to offer two synchronous online Institutes. The MELT program continues to host a wiki space for MELT participant resources. This year, the MELT email list grew to almost 40,000 teachers and administrators across the state of North Carolina as well as school district administrators in five surrounding states. This has greatly affected the visibility of MELT. MELT is now looking at participant evaluations, communicating with K-12 and university faculty, planning for this year's meeting of its Board of Advisors, and communicating with school administrators in order to complete plans for next year's offerings. MELT wishes to capitalize on, and build upon, a number of successes: continually increasing participation in Summer Institutes and the number of Summer Institutes offered, continued support and collaboration with the Mathematics and Science Education Center, student participation in workshops, and the increase in enthusiasm among faculty and participants. The Mathematics and Science Education Center looks forward to continuing its long collaboration with and support of MELT to help make the program the best that it can be.

## **MIDDLE MATHEMATICS IN APPALACHIA PARTNERSHIP (M2AP)**

In March 2017, the Department of Mathematical Sciences at Appalachian State University, in partnership with Avery County Schools, Hickory City Schools, and McDowell County Schools, was awarded an 18-month, \$107,000 North Carolina Department of Public Instruction Mathematics and Science Partnership grant. This funded project, entitled The Middle Mathematics in Appalachia Partnership (M2AP), is designed to provide over 120 hours of professional development centered around the concepts of ratio and proportional reasoning for middle grades mathematics teachers in the partner districts. This summer, participants came to Appalachian for a weeklong

workshop. Professional development activities will continue throughout the 2017-18 academic year, both face-to-face and online. The project will conclude with another weeklong workshop next summer, also hosted at Appalachian. Dr. Erica Slate Young is the project director and principal investigator. Project co-principal investigators are Dr. Deborah Crocker, Dr. Betty Long, and Dr. Tracie McLemore Salinas. Additional project support and professional development facilitation will be provided by Dr. Kathleen Lynch-Davis from Coastal Carolina University and Robin Barbour, an independent consultant, formerly from NCDPI.

## **NORTHWEST REGIONAL SCIENCE FAIR and STUDENT ACADEMY OF SCIENCE**

The Reich College of Education is again hosting the Region 7 Science Fair, chaired by Coleman Bailey (colemanbailey@averyschools.net). The counties in Region 7 are Alexander, Alleghany, Ashe, Avery, Burke, Caldwell, Catawba, McDowell, Mitchell, Watauga, Wilkes, and Yancey. The Fair will be held Tuesday, December 19, 2017, in the morning (tentative snow date January 12, 2018). Registration fees and other details will be posted on the MSEC website, [www.msec.appstate.edu](http://www.msec.appstate.edu), once available. If you are interested in judging in the science fair, contact Phil Johnson (johnsnpe@appstate.edu). In addition, the North Carolina Student Academy of Science (NCSAS) competition will take place in the college on the same day during the afternoon. Susan Purser coordinates the NCSAS competition. If you are interested in judging the NCSAS competition or have questions, please contact Sue (smp28607@gmail.com).



## **NORTH CAROLINA SCIENCE FESTIVAL**

The eighth annual North Carolina Science Festival is expanding to the entire month of April in 2018. Dr. Tonya Coffey, of Appalachian's Department of Physics and Astronomy, and Tracey Tardiff, with College Access Partnerships, will again coordinate campus events for the festival. During the 2018 festival, STEAM (Science, Technology, Engineering, Arts and Mathematics) Expo Day will be held Tuesday, April 24, 2018, on Appalachian's campus. STEAM Expo Day with its large number of awesome science and mathematics activities gets more popular each year and draws crowds of excited participants. Space is limited! Contact Tracey Tardiff (tardiff@appstate.edu) early with requests to attend. More information will be in the spring newsletter and posted to the MSEC website in early spring. Visit <https://ncsciencefestival.appstate.edu/> or [www.ncsciencefestival.org](http://www.ncsciencefestival.org) for more information.

## **NCDPI SUMMER SCIENCE INSTITUTE**

The MSEC was fortunate to be selected as one of the regional sites for the North Carolina Department of Public Instruction

(NCDPI) Institute, "Unlocking Science...AP-2-K: Understanding what it means to be academically able." We are pleased that we were able to secure this opportunity for our teachers and appreciate NCDPI selecting us as one of the sites. The two-day institute awarded 1.2 license renewal credits and furnished stipends to participants. Appalachian's 29 participants were pleased with the informative institute and recommended it highly for other teachers. This was our second year of hosting this popular NCDPI institute, and we hope it will continue to be part of our summer offering for teachers.

## Summer Ventures **SUMMER VENTURES IN SCIENCE AND MATHEMATICS (SVSM)**

60 North Carolina rising juniors and seniors participated in the 2017 SVSM program at Appalachian in July. Students completed high quality research projects, and several will present their projects at the State of North Carolina Undergraduate Research and Creativity Symposium (SNCURCS) on November 4, 2017, at Campbell University. SVSM remains a cost-free program for high academic achieving North Carolina students and is coordinated by the North Carolina School of Science and Mathematics. The program is currently offered at three UNC campuses (Appalachian, ECU and UNCC). Information for SVSM 2018 will be available in mid-October at [www.summerventures.org](http://www.summerventures.org). The application for Summer Ventures is now combined with NCSSM Residential and Online through [CFNC.org](http://CFNC.org). Students must have a College Foundation of North Carolina (CFNC) login, and when completing the general application, there is a special section to complete to apply specifically for Summer Ventures. The application deadline is January 15. Please contact Lori Tyler, SVSM Director at Appalachian ([tylerle@appstate.edu](mailto:tylerle@appstate.edu)), with questions or to schedule a recruitment visit for your school/classroom.



## NCCTM News

### **2017 FALL LEADERSHIP SEMINAR**

The 2017 Fall Leadership Seminar will be held at the Koury Convention Center on Wednesday, November 1. The keynote speakers will be Jennifer Bay-Williams (University of Louisville), Steve Leinwand (AIR), Margaret Smith (University of Pittsburgh), and representatives from the North Carolina Department of Public Instruction. Visit the NCCTM web site at [nctm.org](http://nctm.org) to register for the Leadership Seminar.

### **2017 STATE MATH CONFERENCE**

The 47th annual State Mathematics Conference will be held on November 2-3, 2017 at the Koury Convention Center in Greensboro. Stefanie Buckner and Drew Polly are the Conference Co-Chairs, and Jenna Regan and Kim Solomon are the Program Co-Chairs. The theme for the conference is "Developing a Positive Mathematical Identity!" There will be over 300 sessions and workshops on a wide variety of topics for teachers and other school personnel at all levels. The keynote speakers are Jennifer Bay-Williams (University of Louisville), Karen Economopoulos (TERC), Valerie Faulkner (North Carolina State University), Joleigh Honey (Mathematics Vision Project), William McCallum (University of Arizona), Margaret Smith (University of Pittsburgh), Lee Stiff (North Carolina State University), and Jennifer Wilson (Slow Math Movement). There will be lots of exhibitors, an awards celebration, opportunities to network, and much more. This is a wonderful opportunity for teachers and administrators to recharge, network, and continue learning. Visit the NCCTM web site at [nctm.org](http://nctm.org) to register for the Conference. A preliminary program is posted on the NCCTM website.

### **MATH FAIRS**

The North Carolina Council of Teachers of Mathematics (NCCTM) sponsors three regional math fairs. Winners from the three regional fairs are invited to participate in the State Math Fair. The 2018 Western Region Math Fair will be held on Saturday, March 24 at Plemmons Student Union on the campus of Appalachian State University in Boone, and the NCCTM State Math Fair will be on Friday, May 4, 2018, at the North Carolina School of Science and Mathematics in Durham. A list of the winners in the 2017 State Math Fair can be found at [nctm.org/nctm/assets/file/2017statewinners.pdf](http://nctm.org/nctm/assets/file/2017statewinners.pdf). Pictures of the Western Region Math Fair as well as the State Math Fair are posted at [mathsci2.appstate.edu/Events/MathFair/](http://mathsci2.appstate.edu/Events/MathFair/). Start working with your students on their projects for the upcoming Western Region Math Fair. For more information on the math fairs, go to the NCCTM web site, [nctm.org](http://nctm.org), look for the Resources and Activities tab at the top of the page, and select Math Fairs, or contact Dr. Betty Long ([longbb@appstate.edu](mailto:longbb@appstate.edu)). Information on the 2018 fairs and registration forms will be posted on the NCCTM website in September.

### **MATH CONTEST**

The Department of Mathematical Sciences at Appalachian, in cooperation with the MSEC, will host a regional NCCTM Math Contest for Level I and Comprehensive divisions on Tuesday, March 20, 2018. Qualifiers for Level I will advance to the Regional Finals at UNC-Asheville on May 3, 2018, and Comprehensive will advance to the State Finals at the North Carolina School of Science and Mathematics on April 26, 2018. Online registration and additional information can be found on the Department of Mathematical Sciences' website, <http://www.mathsci.appstate.edu/news-events/math-contest>, by late October.



## 2017 DATES TO REMEMBER

**Science Seminars 2017:** Sept. 14, 21, 28; Oct. 5, 26; Nov. 16; and **2018:** Apr. 19; Appalachian  
**October 18, 2017:** NCSLA Meeting, Greensboro, NC  
**October 19-20, 2017:** NCSTA Annual Professional Development Institute, Greensboro, NC  
**October 24-25, 2017:** NCABR Bridging the Gap Conference, Raleigh, NC  
**November 1, 2017:** NCCTM Leadership Seminar, Greensboro, NC  
**November 2-3, 2017:** NCCTM State Mathematics Conference, Greensboro, NC  
**December 19, 2017:** Region 7 Science Fair and Student Academy of Science, Appalachian

**January 15, 2018:** Deadline for SVSM Applications  
**March 15-18, 2018:** NSTA National Conference on Science Education, Atlanta, GA  
**March 20, 2018:** NCCTM Math Contest, Appalachian  
**March 24, 2018:** NCCTM Western Region Math Fair, Appalachian  
**April 1-30, 2018:** North Carolina Science Festival  
**April 24, 2018:** STEAM Expo, Appalachian  
**April 25-28, 2018:** NCTM Annual Meeting & Exposition, Washington, D.C.  
**May 4, 2018:** NCCTM State Math Fair, Durham, NC

## PROGRAMS FOR K-12 STUDENTS

The MSEC is always pleased to arrange math or science programs for students visiting campus or to present programs in the schools. For many years, we have been sponsoring **Family Math Nights** in elementary and middle schools as well as **Family Science Nights** in elementary schools. These programs encourage students and their parents to exploring interesting facets of mathematics and science together. We may be able to offer special programs on reptiles in the schools this year. The MSEC is pleased to offer these programs at no cost to the schools. Contact Leah McManus (mcmanusld@appstate.edu) for further information on these or other programs.



### Visit us online at

[www.msec.appstate.edu](http://www.msec.appstate.edu)

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Visit us at [www.msec.appstate.edu](http://www.msec.appstate.edu).



## NOTES FROM THE DIRECTOR

Our two newest faculty members in mathematics education, Drs. Ashley Whitehead and Travis Weiland, were to have been featured in the SPOTLIGHT section of the newsletter; however, due to lack of space this article will be in the spring newsletter. We are pleased to welcome them to Appalachian and hope they will have many happy, productive years here. This feature of the newsletter debuted in fall 2015 and has become one of the most popular features in the newsletter. Please let me know of other Appalachian faculty or teachers in the schools whom you would like to see featured.

This season's science seminars are scheduled on many Thursday evenings in fall semester and one in the spring as part of the North Carolina Science Festival. Some of you have wondered why the seminars are spread out the way they are. Seminars are scheduled on Thursday evenings that do not conflict with meetings of the state math or science teachers, with fall break, or with Thursday night football; thus, there will be some seminars for several weeks in a row and then a two-week break before the next one. We have another outstanding seminar series this year, and we hope you will join us and encourage others to come.

My thanks to everyone who contributed to and helped proofread the newsletter. If you have ideas for articles in mathematics and science education that should be considered for inclusion in future newsletters, please let me know.

Phil Johnson