

# Mathematics and Science Education Center

APPALACHIAN STATE UNIVERSITY

MSEC Newsletter

Spring 2015

## DATES TO REMEMBER

**March 12-15:** NSTA National Conference on Science Education, Chicago, IL

**March 21:** NCCTM Western Region Math Fair, ASU

**March 27:** NCCTM Spring Leadership Seminar, Greensboro, NC

**March 31:** Regional NCCTM Math Contest, ASU

**April 10-26:** North Carolina Science Festival

**April 11:** NCCTM Western Region Mathematics Conference, Owen High School, Black Mountain, NC

**April 16 & 23:** Science Seminars, ASU

**April 15-18:** NCTM Annual Meeting & Exposition, Boston, MA

**April 22:** STEAM Expo Day, ASU

**April 25:** Sumo Bot Competition, ASU

**May 8:** NCCTM State Math Fair, Durham, NC

**June 15:** Research Experience for Teachers starts, ASU

**June 22-26:** MELT Week 1 (Integrating Technology into Mathematics; Math 1: The 1st High School Math Course; Grades K-5 Measurement and Statistics; and Grades 6-8 Measurement and Statistics)

**July 13-17:** MELT Week 2 (Math 2: The 2nd High School Math Course; Probability and Statistics; Grades K-5 Algebra and Functions; Grades 6-8 Algebra and Functions)

**July 20-24:** MELT Week 3 (Math 3: The 3rd High School Math Course; Building Mathematical Thinkers; Grades K-5 Geometry; and Grades 6-8 Geometry)

**June 27 – July 25:** Summer Ventures in Science and Mathematics at ASU

**July 14-16:** NCTM Affiliate Leaders' Conference, Phoenix, AZ

**November 4:** NCCTM Fall Leadership Seminar, Greensboro, NC

**November 5-6:** NCCTM State Mathematics Conference, Greensboro, NC

**November 12-13:** NCSTA Professional Development Institute, Winston-Salem, NC

## PROGRAMS FOR K-12 STUDENTS

The MSEC is always pleased to arrange math or science programs for visiting students. Especially popular with visiting school groups have been science presentations by Curriculum and Instruction faculty members Jeff Goodman, Leslie Bradbury and Rachel Wilson. Most of these programs take place during the academic year, but programs for summer visitors are also possible.

**Family Math Nights and Family Science Nights** in elementary and middle schools involve students and their parents exploring together interesting facets of mathematics and science. Bill and Birgitta McGalliard conduct the Family Math Nights and science educators from the Reich College of Education conduct the Family Science Nights. Also popular are presentations by geologist Jack Callahan for Grades 3-9 classes on rocks, minerals, North Carolina geology, the Blackbeard shipwreck, geo-archaeology project or other geology topics by special request. The MSEC is pleased to offer these programs at no cost to the schools. Contact Ms. Vickey Isaacs at isaacsve@appstate.edu for further information on these or other programs.



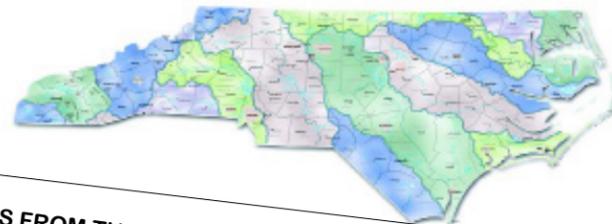
Visit us online at

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

**Math & Science Education Center:** Phone 828/262-3185; Fax 828/265-8677

**E-mail Contacts:** isaacsve@appstate.edu; johnsnpe@appstate.edu

**MSEC Staff:** Phillip Johnson Director; Betty Long, Assistant Director; Lori Tyler, Summer Ventures in Science and Mathematics Director; Vickey Isaacs, Administrative Assistant



## NOTES FROM THE DIRECTOR

We are pleased with the continuing heavy use of Mathematics and Science Education Center resource materials and services. Thanks to the grant-supported efforts of Eric and Kim Marland, our Resource Room now has robotics kits in addition to the math manipulatives, science kits, math and science education journals and other materials that we have had for years. We strive to keep an up-to-date Resource Room by periodically making new additions and replenishing old materials. Our community outreach efforts continue to grow with family math and science nights that involve parents of students and with our science seminars that are increasingly popular with the larger community. You are always welcome to browse through the materials that we have and are encouraged to let us know of things that we can do to make the Center more responsive to your needs.

My thanks to the contributors to the spring 2015 newsletter: Mike Bossé, Vickey Isaacs, Betty Long, Eric Marland, Sue Purser, Rahman Tashakkori, and Lori Tyler.

Phil Johnson

## MELT Summer Institutes

Through the Mathematics Education Leadership Training Program (MELT), twelve weeklong professional development institutes for K-12 mathematics teachers will be offered on the ASU campus this summer. The weeks of the institutes are June 22-26, July 13-17, and July 20-24. The institutes are offered in cooperation with Appalachian State University's Department of Mathematical Sciences and the Mathematics and Science Education Center. All of the institutes are focused on the North Carolina State Standards for Mathematics. The fee for each institute is \$300. While space permits, for an additional fee, housing is available for MELT participants. Additionally, participants will earn either 3 CEUs or 2 graduate credits for each Summer Institute. (If an institute is taken for graduate credit, the usual graduate fees will also apply.) A listing of the twelve Institutes to be offered is under this newsletter's "Dates to Remember" section. Registration for all institutes is now open. For a registration form and descriptions of the institutes, visit the MELT websites, <http://melt.appstate.edu> and <http://melt.appstate.edu/summer-institutes>.

If you have questions about 2015 MELT institutes, please contact Dr. Mike Bossé, Director of MELT, at 828-262-2862 or [bossenj@appstate.edu](mailto:bossenj@appstate.edu).

## Research Experience for Teachers

The Department of Computer Science at Appalachian State University received funding from the National Science Foundation (NSF) in 2012 to establish a three-year Research Experience for Teachers (RET) site in Data Analysis & Mining, Visualization, and Image Processing. Dr. Rahman Tashakkori wrote the successful grant proposal for the program. The workshop provides twelve in-service math/science high school teachers and community college faculty the opportunity to work with faculty mentors and their graduate and undergraduate assistants to conduct research in these fields. During this six-week summer program, participants gain skills that they can utilize to assist their students to solve interdisciplinary problems. In addition, participants design learning modules to teach STEM concepts in their courses. The first two RET programs, in summers 2013 & 2014, were great successes and resulted in twelve excellent research projects and more than sixty course modules that are available for adoption at [www.cs.appstate.edu/ret](http://www.cs.appstate.edu/ret). For goals and other details of the program, see the article in the fall 2014 MSEC newsletter at [www.msec.appstate.edu](http://www.msec.appstate.edu). The program provides \$6,000 stipends, free housing & meals during summer, and other supports during the academic year. Applications are now being accepted for the summer 2015 program which will start on June 15. We encourage interested parties to refer to the web page of the program, [www.cs.appstate.edu/ret](http://www.cs.appstate.edu/ret), for details.



## SPRING SCIENCE SEMINARS

The last seminars of the 2014-2015 series are part of this year's North Carolina Science Festival. All seminars are open to everyone, are free, and offer license renewal credits (0.2 per seminar) to teachers. Seminars are held in room 124C in the new Reich College of Education Building from 6:00-8:00 p.m. with refreshments at 6:00. The remaining seminars in this year's series are:

**April 16, 2015:** Brett Taubman (Chemistry), "Fermentation, the Original Sustainable Practice"

**April 23, 2015:** Rachel Wilson (Curriculum and Instruction), "The Sustainable Student: Educating for Empowerment and the Environment"

This year's theme, Science and Sustainability, has been a popular one, with seminars averaging 37 participants in the fall; similar numbers are anticipated for the two spring seminars. Due to the popularity of this year's series and the fact that we have not nearly exhausted the topic, we will follow up with a similar theme, Science and the Environment, for next year's seminars. Once they are finalized, next season's seminars will be announced on our website and will start in September of 2015.



## KEEP UP WITH MSEC ACTIVITIES

Print copies of the newsletter are distributed to math and science and some other departments on campus and are available at the MSEC for visitors and participants in center programs. You can always read both current and earlier newsletters at [www.msec.appstate.edu](http://www.msec.appstate.edu). If you

are a K-12 teacher, we invite you to add your name to one or more of our elementary, middle or high school list serves by sending your e-mail address and which list serve(s) you wish to join to Mrs. Vickie Isaacs at [isaacsve@appstate.edu](mailto:isaacsve@appstate.edu). Once you are on a listserv, please remember to let us know of any address changes. In addition to information in the newsletter and information sent to listserv members, the MSEC website always has the most up-to-date information on center activities. Another source of ASU STEM (Science, Technology, Engineering, and Mathematics) education and outreach is the website recently started by Marta Toran of the Biology Department; visit the site at <http://stem.appstate.edu>.

## NORTH CAROLINA SCIENCE FESTIVAL,

**April 10-26, 2015**



A one-day ASU STEAM (Science, Technology, Engineering, Arts and Mathematics) Expo will be held on campus on Wednesday, April 22 as part of the fifth

annual North Carolina Science Festival. The Expo event will be in the Holmes Convocation Center from 9:00 a.m. - 2:00 p.m. with other stand-alone events in Plemmons Student Union and other places on campus. The STEAM Expo is on a weekday so that schools can come to campus for a field trip and have their students experience some awesome science activities. Approximately 2000 students participated in last year's Expo activities. This year's MSEC Expo booth will have a number of displays along with science activities led by Judy Sink and Lou Moore, science educators who for many years have done the popular Center-sponsored family science nights. The booth will also feature math activities led by Betty Long, Professor of Mathematical Sciences and Assistant Director of the Mathematics and Science Education Center. For more information about STEAM Expo and other activities taking place at Appalachian State University during the festival, visit <http://ncsciencefestival.appstate.edu>. To book your class or homeschool group for the Expo, contact Tracey Tardiff ([tardiff@appstate.edu](mailto:tardiff@appstate.edu)).

## NORTHWEST REGIONAL SCIENCE FAIR

The Mathematics and Science Education Center was pleased to host this year's North Carolina Region 7 Science Fair on December 16,

2014. Student science projects from Grades 3-12 were on display in the new College of Education Building on the ASU campus. A total of 87 elementary level projects, 159 middle school level projects and 33 high school level projects participated in the competition. In addition to the regional science fair, there were 61 papers presented by students in the afternoon Student Academy of Science competition. Under the able direction of Avery County High School science teachers Coleman Bailey and Sue Purser, a large number of school personnel worked to assure the success of the fair. Judges consisted of teachers, upper-level university science students, professors, and scientists and engineers from industry. Between sessions, science education instructor Jeff Goodman entertained students, parents and others with an awe-inspiring science show. Appreciation is expressed to the large number of volunteers who helped make this year's event such a success. Congratulations to the students whose research projects were selected to attend the state level North Carolina Student Academy of Science competition on March 27 at the NC School of Science and Math, and to those who will advance to the state level Science and Engineering Fair at



Meredith College in Raleigh on March 28, 2015. The list of North Carolina Fair winners chosen from the ten regional science and engineering fair winners are posted at <http://www.ncsciencefair.org>.

## NCCTM MATH CONTEST

The Department of Mathematical Sciences and the MSEC will host the Appalachian State University Math Contest for Level I and Comprehensive on Tuesday, March 31, 2015. Registration deadline is March 17. Registration forms and information are on the Math Contest website: <http://mathsci.appstate.edu/news-events/math-contest>. Contact Lori Tyler ([tylerle@appstate.edu](mailto:tylerle@appstate.edu)) for more information.

## MOUNTAIN SCIENCE EXPO

The Mountain Science Expo 2015: Full STEAM Ahead! will be held at the NC Arboretum in Asheville on Saturday, April 11 from 10:00 a.m. - 5:00 p.m. Several Summer Ventures in Science & Math students from the Western Region will be attending to present their research. Events include science fair exhibits from Project EXPLORE, special presentations from Dawn Cusick and others as well as various businesses, organizations, institutes, scientists, and naturalists that will have booths and displays for hands-on fun! More information can be found at: <http://www.ncarboretum.org/education/mountain-science-expo/>.

## FUTURE DOCTORS AND SCIENTISTS CAMP

A new camp will be offered July 1-26, 2015 at ASU this summer for students in Grades 9-12+ who are interested in becoming doctors or scientific researchers. More information can be found along with other summer science camp listings, including Forensic Science, Anatomy & Physiology, and Forensic Anthropology offered at Appalachian State University at: <http://conferences-camps.appstate.edu/>

## ELEVATING MATHEMATICS FOR GRADES 4-6

Appalachian State University, through the Mathematics and Science Education Center and the Department of Mathematical Sciences, is teaming up with Lenoir Rhyne University and East Tennessee State University (ETSU) to offer three math tournaments this April. This will be the fourth year for the event at Appalachian, but the first for both Lenoir Rhyne and ETSU. The tournaments stress participation and fun with out-of-the-box type thinking in both individual and team sections. All solutions will be reviewed after each section. Look for details at <http://www.l.appstate.edu/~marland/HighCountryMath/HighCountryMT.html> or email Dr. Eric Marland, [marlandes@appstate.edu](mailto:marlandes@appstate.edu), for details. Because of space limitations and a desire to make this a friendly tournament, we will be holding the number of teams to 30 at Appalachian and 20 at the other two venues. However, up to three teams (of 5) per school are invited to participate. Marland says, "We do give out a bunch of awards, but this is mostly about having fun doing math."

## SUMMER VENTURES IN SCIENCE AND MATHEMATICS

Summer Ventures in Science & Math applications were due January 31, 2015 for the programs to be held this summer at Appalachian State University, East Carolina University, North Carolina Central University, and the University of North Carolina at Charlotte. We encourage teachers to share program information with their sophomores and juniors each year. Summer Ventures is a cost-free state funded program coordinated through the North Carolina School of Science and Mathematics where students study and conduct research for four weeks each summer. Lori Tyler, ASU Director, is available for school visits and recruiting beginning in October. For more information, please visit: [www.summerventures.org](http://www.summerventures.org)

## HIGH SCHOOL ROBOTICS ARRIVES IN BOONE

On Saturday, January 24 Appalachian State University played host to a regional qualifier robotics tournament for the FIRST (For Inspiration and Recognition of Science and Technology) Tech Challenge. The competition is primarily aimed at high school students and included teams from around the region. The competition was organized as a partnership between Appalachian, through the MSEC and the department of Mathematical Sciences, and the Watauga High School Robotics Club, led by Mr. Tom Brown. Tournament chair Dr. Eric Marland says it was a natural extension of the Sumo Bot competition held each April and the FIRST FLL (First Lego League) competition held in November at Watauga High School. Marland says, "We have been very fortunate to have the support of the University and a lot of really wonderful volunteers." The current plan is to hold the same series of competitions next year as well. The next robotics event is the Sumo Bot competition during the North Carolina Science Festival, to be held on April 25 in the Appalachian Student Union. Details can be found at <http://www.l.appstate.edu/~marland/robots/sumosumo.html> or email Marland at [marlandes@appstate.edu](mailto:marlandes@appstate.edu)



## NCCTM NEWS

### NCCTM Spring Leadership Seminar Friday, March 27, 2015

**Theme:** The Mindset Revolution: Teaching Mathematics for a Growth Mindset  
**Location:** Marriott Greensboro Hotel (go to [NCCTM.org](http://NCCTM.org) to make hotel reservations by February 26)  
**Time:** 9:00 a.m. to 3:15 p.m. **Keynote Speaker:** Dr. Jo Boaler

Dr. Jo Boaler is a Professor of Mathematics Education at Stanford University. She is also the editor of the Research Commentary Section of The Journal for Research in Mathematics Education (JRME), an analyst for PISA testing in the OECD, and author of the first MOOC on mathematics teaching and learning. She is the recipient of a National Science Foundation 'Early Career Award' and the NCSM Kay Gilliland Equity Award (2014). She is the author of seven books and numerous research articles. Her latest books, What's Math Got To Do With It? (2009) and The Elephant in the Classroom (2010), both aim to increase public understanding of the importance of good mathematics teaching. She serves as an advisor to several Silicon Valley companies and as a White House presenter on girls and STEM. She is the co-founder of youcubed ([www.youcubed.org](http://www.youcubed.org)) which gives teachers and parents the resources and ideas they need to inspire and excite students about mathematics.

Dr. Boaler's keynote address will focus on what it means to teach math for a growth mindset. She will work with participants on different mathematics tasks, different forms of assessment and grading, grouping arrangements, encouragement and praise, and many other aspects of mathematics teaching, through the use of classroom videos and math tasks.

There will be four afternoon break-out sessions (K-2, 3-5, 6-8, 9-12), facilitated by the Department of Public Instruction Mathematics Consultants.

**Registration:** Fee is \$65.00 for NCCTM members (includes lunch)  
Fee is \$75.00 for non-members (includes lunch)  
Register at [ncctm.org](http://ncctm.org)

**Questions?** Contact Debbie Crocker: [crockerda@appstate.edu](mailto:crockerda@appstate.edu)

## NCCTM WESTERN REGION MATH FAIR

The NCCTM Western Region Math Fair will be held on Saturday, March 21, 2015 in the Plemmons Student Union at Appalachian State University for students in Grades K-12. The math fair is coordinated by Sumer Inman at North Buncombe High School, Stefanie Buckner in Buncombe County Schools, and Susan Jones at Cleveland Community College. Fifty ASU pre-service teachers and other volunteers will assist them.

We encourage K-12 teachers to enter students in the math fair. It is a wonderful experience that enables students to work on a math project as well as gain experience communicating mathematics. The students who place First, Second, Third, or receive Honorable Mention will be invited to participate in the NCCTM State Math Fair to be held on May 8, 2015 at the North Carolina School of Science and Mathematics in Durham.

Visit <http://tinyurl.com/ncctmwestmath> for more information on the Western Region Math Fair and to fill out the online registration form located on the Participant or Parent/Teacher page. The registration fee is \$8 per student, and payment must be postmarked by February 27, 2015.

## NCCTM Fall Leadership Seminar and Annual State Mathematics Conference

The North Carolina Council of Teachers of Mathematics (NCCTM) Fall Leadership Seminar will be on Wednesday, November 4, 2015 at the Joseph S. Koury Convention Center in Greensboro.

The North Carolina Council of Teachers of Mathematics 45th Annual State Mathematics Conference will be held on November 5-6, 2015 at the Koury Convention Center in Greensboro, and this year's theme is "Principles to Actions into Action." The program is currently under development. If you would like to speak at the conference, please submit a proposal by accessing the online form at <http://tinyurl.com/NCCTM2015>. The deadline for speaker proposals is May 15, 2015. If you have any questions, please contact the Program Co-Chairs: Lisa Carnell ([lcarnell@highpoint.edu](mailto:lcarnell@highpoint.edu)) and Amy Travis ([hatravis@bellsouth.net](mailto:hatravis@bellsouth.net)).

Watch the NCCTM website (<http://ncctm.org>) for more information on both the Fall Leadership Seminar and the Annual State Math Conference. In the meantime, put the dates on your calendar! We hope to see you at the Leadership Seminar on November 4 and the State Math Conference on November 5-6.

## NCCTM Western Region Mathematics Conference

The Western Region Math Conference will be held on Saturday, April 11 at Charles D. Owen High School in Black Mountain. Registration begins at 8:30 a.m., and the sessions will be from 9:00 a.m. to 12:30 p.m. The conference will be an edcamp where participants will attend discussion forums which will focus on a variety of current high-interest topics including topics the participants will generate that morning. Please contact Kim Clark ([kimberly.clark@bcsemail.org](mailto:kimberly.clark@bcsemail.org)) or Marta Garcia ([marta.garcia@bcsemail.org](mailto:marta.garcia@bcsemail.org)) if you have any questions about the conference.