

ence 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.



NORTH CAROLINA SCIENCE FESTIVAL

The third annual North Carolina Science Festival will be held April 5-21, 2013. A one-day Science Expo was held on the ASU campus during last year's Festival and drew more than 1000 students who experienced some awesome science activities. Last year there were more requests from schools wanting to attend Science Expo Day than could be accommodated, so get requests to attend in early once the schedule is set. More information will be available in the spring newsletter and on our website as it becomes available. You may also get the information by visiting www.ncsciencefestival.org. Dr. Tonya Coffey of the Physics and Astronomy Department will again coordinate campus events for the NC Science Festival.

DATES TO REMEMBER

Science Seminars 2012:	Sept. 20, 27; Oct. 4, 18; Nov. 1, 15, 29; and 2013: April 11, 18
October 24, 2012:	NCCTM Leadership Seminar, Greensboro, NC
October 25-26, 2012:	NCCTM State Mathematics Conference, Greensboro, NC
November 8-9, 2012:	NCSTA Annual Professional Development Institute, Winston Salem, NC
January 31, 2013:	Deadline for SVSM Applications
March 20, 2013:	Math Contest, ASU (<i>Tentative</i>)
March 22, 2013:	NCCTM Spring Leadership Seminar, Greensboro, NC
April 5-21, 2013:	North Carolina Science Festival
April 11- 14, 2013:	NSTA National Conference on Science Education, San Antonio, TX
April 17-20, 2013:	NCTM Annual Meeting & Exposition, Denver, CO
April 13, 2013:	NCCTM Western Region Math Fair, ASU
May 3, 2013:	State Math Fair, Durham, NC

SUMMER VENTURES IN SCIENCE & MATHEMATICS

Summer Ventures had a great summer this year with 91 students attending from 71 high schools in 32 counties from across North Carolina. All instructors commented on the intelligence of students and this is represented by the fact that ASU SVSM students had an average of 3.9 unweighted GPA and a 4.5 weighted GPA with 36 students having a 4.0 average. We offered twelve research and demonstration courses taught by ASU Faculty and area high school teachers as well as an exciting residence life program! Applications will be available online at www.summerventures.org in early October with a January 31, 2013 deadline. Please contact Lori Tyler (tylerle@appstate.edu) if you would like to schedule a recruitment visit to your school.

MATH CONTEST

The Department of Mathematical Sciences at ASU will host a North Carolina Math Contest again this spring for Algebra 1 (Common Core equivalent) and Comprehensive divisions. The contest is scheduled tentatively for Wednesday, March 20, 2013. Registration information will be emailed soon to sponsors who have brought teams in the past. If you would like further information about ASU's contest, please check the Math Contest website <http://www.mathsci.appstate.edu/news-events/math-contest> or contact Lori Tyler at tylerle@appstate.edu.

Visit us online at www.msec.appstate.edu

NOTES FROM THE DIRECTOR

After a summer filled with math and science workshops, we are getting geared up for the academic year's activities. The Thursday night science seminars are set for the year and many time slots for programs in the schools are already taken for fall semester; if you want one or more of these programs at your school, please get requests in soon. The summer's MELT workshops have generated requests for information sessions or workshops on the Common Core State Standards in Mathematics, and the Math/Science Center is happy to support these. Please let us know of any professional development or other programs that you would like the Math and Science Education Center to consider offering. We get many visitors to the MSEC who come to check out math and science materials and to read the math and science education journals; if you have not yet made use of the resources that are available in the Center, we encourage you to pay us a visit. The resource room is well stocked and we are pleased that so many teachers take advantage of what is available here. We always look forward to your visits and will continue to strive to do all that we can to help you in the important work that you do.

My thanks for contributions to the newsletter by Betty Long, Lori Tyler, Tracie Salinas, Max Dass, Eric Marland, and Vickey Isaacs,
Phil Johnson

Mathematics and Science Education Center

APPALACHIAN STATE UNIVERSITY

MSEC Newsletter

Fall 2012



2012-2013 Science Seminars

This year's seminars will focus on advances in science that change our perceptions of the natural world. The seminars are open to everyone, are free, and offer license renewal credits (0.2 per seminar) to teachers. All seminars will be in room 124C in the new Reich College of Education Building from 6:00-8:00 p.m. with refreshments at 6:00. The two spring seminars are part of the North Carolina Science Festival that will take place during April 5-21, 2013. The schedule for "Advances in Science that Change Our Perceptions of the Natural World" is:

September 20	Andy Heckert (Geology), <i>Dinosaur Renaissance</i>
September 27	Tonya Coffey (Physics and Astronomy), <i>Relativity</i>
October 4	Dan Caton (Physics and Astronomy), <i>The Accelerating Universe</i>
October 18	Sammye Sigmann (Chemistry), <i>The Environmental Revolution of the 1970s</i>
November 1	Howie Neufeld (Biology), <i>The Evolution of Evolution: Do Great Theories Ever Arise in Isolation?</i>
November 15	Jeff Goodman (Curriculum and Instruction), <i>The Brain as a Meat Machine: Modern Neurobiology, Free Will, and the Hard Problem of Consciousness</i>
November 29	Marty Root (Nutrition and Health Care Management), <i>How Will We Feed 9 Billion People?</i>
April 11	Jim Houser (Technology), <i>Alternative Transportation, What Is the Best Route?</i>
April 18	Max Dass (Biology), <i>Scientific Advances: Revolutionary Paradigm Shifts or Incremental Knowledge Growth? Or, Both!?</i>



First Workshop on Robotics Popular with Teachers

This summer's "High Country Robotics," sponsored by a NASA NC Space Grant and led by Dr. Eric Marland (Mathematics) and Mr. Brad Johnson (Physics), introduced middle and high school teachers to the world of robotics and their usefulness in teaching. Teachers were unanimous in praising the workshop for what they learned during the week. The robotics kits are now housed in the Mathematics and Science Education Center and may be checked out for use in the schools; almost half of them have already been checked out. If you missed your chance to attend the workshop this summer, you will have another opportunity as we plan to repeat the five-day robotics workshop next summer; the success of this summer's workshop convinced us that it is worth repeating. We are hopeful of obtaining grant support again, but plan to offer the workshop in any case. Watch for the announcement of this and other professional development opportunities on our website, www.msec.appstate.edu, in the spring.



PROJECT SMILE FINISHES A SUCCESSFUL THREE-YEAR RUN

The NSF-funded Project SMILE (Science and Mathematics Integration for Literacy Enhancement) concluded this summer with the last institute of a successful three-year program. Teams of math and science teachers from six middle schools, representing five counties, learned how to best use technological tools to integrate teaching scientific inquiry with mathematical problem solving. The program involved teachers in a summer institute each year that was then followed

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in the academic year by teachers applying in their classrooms what had been learned during the summer by way of creating instructional modules that integrated math and science. There was close coordination between the project staff and participating teachers throughout the three years. Although the project is completed, the project website that was set up will remain operational and teachers will continue to have access to helpful ideas through the website as well as being able to consult with project staff. Dr. Max Dass (Biology) was PI for the project and Dr. Tracy Goodson-Espy (Curriculum and Instruction) was co-PI. For a list of other staff and participants involved in the project, please see the spring 2010 newsletter at www.msec.appstate.edu (click on ABOUT for the link to the newsletter).

K-8 SCIENCE WORKSHOPS

Four of the MSEC workshops during summer 2012 dealt with different levels and aspects of science in grades K-8. Experienced elementary school teachers Judy Sink and Lou Moore led a four-day K-5 workshop entitled “Unraveling the New Science Essential Standards.” Judy and Lou conduct the Family Science Nights during the academic year that are so popular with students and their parents. Laura Mallard and Crystal Wilson of the Department of Geology led a week-long Earth Science Workshop for middle and high school teachers. Leslie Bradbury and Rachel Wilson, science educators in the Department of Curriculum and Instruction, led a three-day workshop for grades 3-8 teachers that focused on forces and motion. Caldwell County teachers Marilyn Pendley and Amy Bradley led a three-day middle school science workshop, “Essential Science for North Carolina Schools,” at the Catawba Science Center in Hickory. The MSEC has done several workshops at the Catawba Science Center in the past and it was good to reestablish that connection. All workshops had low enrollments that allowed for individualized attention. The MSEC was pleased to offer so many workshops in science at the K-8 level. Watch for next summer’s K-8 science offerings and consider joining your colleagues in one or more of the workshops that fit your needs and interests. You will be rewarded with an excellent experience that will be helpful in your classrooms.

HIGH SCHOOL SCIENCE WORKSHOPS

Three highly successful workshops primarily for high school teachers were a part of the summer 2012 professional development opportunities that took place on the ASU campus. “From Misconceptions to Scientific Conceptions: Effectively Teaching Major Biological Concepts,” led by Max Dass and Amy Bradley, was a five-day workshop that included content knowledge along with effective teaching methods. Experienced teachers Amy Bradley and Marilyn Pendley led a three-day AP Biology Institute. The three-day “Bio-Monitoring of Genetically Modified Organisms,” led by Eva Gonzales with assistance from Amy Bradley, introduced teachers to new concepts along with ideas for improving instruction in their classrooms. The Bio-Monitoring workshop was supported by a grant from the North Carolina Biotechnology Center. Teachers attending the workshop received stipends, some meals, and had the option of staying in a Boone hotel paid for by the grant. The benefits of the work-

shop and positive evaluations from the participants have led us to consider applying for another such workshop so that other teachers may hopefully have this opportunity in summer 2013.

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 Jeff Goodman and Leslie Bradbury. 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; Judy Sink and Lou Moore conduct the Family Science Nights. Also popular are presentations for grades 3-9 classes on rocks, minerals, North Carolina geology, the Blackbeard shipwreck, geo-archaeology project or other geology topics by Jack Callahan. 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.

The Mathematics and Science Education Center jointly sponsored with the Department of Mathematical Sciences the fifteenth annual Math Camp for rising sixth through twelfth graders in summer of 2012. For the second summer, there was also an ASU Math Camp at Discovery Place in Charlotte in addition to the on-campus Math Camp. We are pleased to be a joint sponsor of this program that continues to draw large numbers of students year after year.

APPALACHIAN MATHEMATICS PARTNERSHIP

The Appalachian Mathematics Partnership (AMP) project completed its first year of professional development in the spring. Partnering teachers and administrators completed summer sessions and follow up during the academic year, participated in the NCCTM conferences, and shared resources related to the Common Core. Going into its second year, the project worked with NC DPI to partner with more districts and schools and has grown to include eleven districts and several non-public schools. The project offered four weeks of professional development this summer and is currently planning follow-up sessions for all partners. Through AMP, teachers are recognizing that they must engage their own mathematical practices in order to support their students in developing their own mathematical thinking and are supporting one another in changing and reflecting on their teaching practices.

The AMP project is funded by a Mathematics-Science Partnership grant. This project assists regional schools in improving student achievement in mathematics by achieving their visions of inquiry-oriented mathematics in the classroom in grades 8-12. AMP provides teachers with an immersion experience in an inquiry-oriented classroom complemented by experience with the Common Core State Standards, all while delving into rich mathematics content. Dr. Tracie Salinas of the Department of Mathematical Sciences is the project director. Other members of the project team

are Drs. Debbie Crocker and Katie Mawhinney of Mathematical Sciences and Dr. Kathleen Lynch-Davis of Curriculum and Instruction. Master Teacher Mike Verkaik of Michigan is also on the team.

MELT MATHEMATICS EDUCATION LEADERSHIP TRAINING (MELT) PROGRAM

Under the able guidance of Interim Director Debbie Crocker, the summer 2012 MELT Program was one of the most successful ever. The six courses that were offered all emphasized the Common Core State Standards for Mathematics (CCSSM). The week 1 offerings were SITE: Algebra (Algebra and Functions in the CCSSM) and SITE: Geometry (Geometry in the CCSSM); week 2 offerings were Modeling Across the Curriculum in the Common Core State Standards for Mathematics and Understanding the Standards for Mathematical Practice; week

3 offerings were Middle School Mathematics and the CCSS and Multimedia in the Common Core Mathematics Classroom. Careful consideration was given to just what courses would best meet the needs of teachers as the state implements the CCSSM.

The new Director of MELT is now on campus and is already busily preparing for next summer’s program. Michael Bossé, previously a faculty member at East Carolina University, has joined the Department of Mathematical Sciences as Distinguished Professor of Mathematics Education and Director of the MELT Program. In a note to the MELT Board of Advisors, Mike lauded the success of last summer’s MELT Program with special praise for the work done by Debbie as interim director. He noted the increased numbers and enthusiasm and observed that instructors and participants were energized. Mike wants to capitalize on the great success of last summer’s program and to build upon it. The Mathematics and Sci-

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NCCTM NEWS

State Math Conference

The State Mathematics Conference will be held on October 25-26 at the Koury Convention Center in Greensboro. Kathleen Lynch-Davis and Chrystal Dean are the Conference Co-chairs; Sheila Brookshire and Kelly DeLong are the Program Co-chairs; and Karen McPherson is the Program Booklet Editing Chair. There are several new features this year at the math conference. They include the Lunch and Learn Series, the CCSSM Product Showcase, and a Movie Night. The theme for this year’s conference is “Common Core: The Journey Begins,” and there are 240 sessions and 120 workshops on a wide variety of topics for teachers and other school personnel at all levels. The keynote speakers are Peg Smith, Patrick Vennebush, Laura Candler, and Erin Krupa. The featured speakers include June Atkinson, Tom McDougal, Joan Holub, and Jere Confrey. Since we are just beginning to implement the Common Core State Standards for Mathematics (CCSSM), the program for this year’s conference includes many informative sessions on the CCSSM. The sessions include content in the Common Core Standards and ideas for incorporating the Standards for Mathematical Practice into classrooms. This is a wonderful opportunity for teachers and administrators to continue educating themselves on this new curriculum and the Standards for Mathematical Practice. To find more details about the conference and to register, visit the NCCTM web site at NCCTM.org.

Fall Leadership Seminar

The 2012 Fall Leadership Seminar will be held at the Koury Convention Center on Wednesday, October 24 (the day before the State Mathematics Conference). The theme is “Common Core: The Journey Begins.” The North Carolina Department of Public Instruction will do an information session on the CCSSM with updates and time for questions, and the keynote speakers will be Dr. Margaret (Peg) Smith and Ms. Debbie Crawford. Dr. Smith is a Professor in the Department of Instruction and Learning and a Senior Scientist at the Learning Research and Development Center, both at the University of Pittsburgh. Her presentation at the Leadership Seminar will focus on “Tasks, Tools, and Talk: A Framework for Enacting the CCSS Mathematical Practices.” Debbie Crawford is the Mathematics Professional Development Program Manager for Pearson’s School Achievement Services – supporting teachers from preparation through practice. Her presentation at the Leadership Seminar will focus on “Summing It Up: What We Know About the 2014-2015 Assessments.” The Leadership Seminar is another great opportunity for teachers and administrators to educate themselves on the new curriculum, the Standards for Mathematical Practice, and new assessments that will accompany these changes. For more details on the Leadership Seminar and to register, visit the NCCTM web site at NCCTM.org.

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 2013 Western Region Math Fair will be held on Saturday, April 13 at Plemmons Student Union on the campus of Appalachian State University in Boone, and the NCCTM State Math Fair will be on Friday, May 3, 2013 at the North Carolina School of Science and Mathematics in Durham. The winners of the 2012 State Math Fair may be found at ncctm.org/math_fair.cfm, and last year’s winners of the Western Region Math Fair were posted in the Spring 2012 newsletter, which may be accessed on the MSEC website.

Start working with your students on their projects for the Western Region Math Fair. For more information on the math fairs, go to the NCCTM web site, ncctm.org, and click on Math Fairs on the left of the screen. New information on this year’s fairs and registration forms will be posted.