



Science Education



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College of Education and Human Development George Mason University

CREST Offers Six Teacher Education Programs Summer 2007

Teachers will benefit from programs especially designed for them to experience research-based methods of teaching science. Some programs offer materials and stipends for teachers completing the programs.

Teachers

Physics – grades 6-10 and special education
Astronomy – middle and high school
Geology – middle and high school
Alexandria City Public Schools – elementary school

Future Teachers

Archeology – elementary school
Forensic Science – elementary school
For more information see elsewhere in this newsletter, contact jbailey2@gmu.edu, and read online (<http://gse.gmu.edu/centersoffices/crest/>).

Foundational Physics

Foundational Physics is for eighth grade physical science teachers, ninth or tenth grade Active Physics teachers, and middle/high school special education science teachers to learn about “modeling.” Research indicates that student test scores increase each year for five years for teachers who implement modeling as a method of instruction for teaching physical science. The workshop covers mechanics, electricity and magnetism, and light and sound.

Summer Dates: July 2 - July 20, 2007

Follow-up sessions: February 9 and April 5, 2008

Place: Robinson Secondary School, Fairfax, VA

Stipends: \$750 stipend for successful completion of course, approximately \$600 in equipment and materials, and lunch during the summer

Registration: Space is limited to 20 teachers.

Funds are provided by the federal Improving Teacher Quality State Grants (Title II, Part A,) Professional Development Program administered by the State Council of Higher Education for Virginia.

For more information:

<http://gse.gmu.edu/centersoffices/crest/documents/newsletters/physics.pdf>

Summer Camp Mysteries for Children and Future Teachers

Students entering grades 5-7 will investigate mysteries in archeology or forensics at CREST summer camp. Each session students will have fun as they act as scientists to solve real world problems. Camp will be taught by preservice master's degree teachers in Mason's PK-6 teacher licensure program under the direction of Dr. Wendy Frazier. Space is limited to 24 children per session on a first-come, first-served basis. For information:

<http://gse.gmu.edu/centersoffices/crest/camp>

Provisionally Licensed Science Teachers Receive Support

The New Science Teachers' Support Network (NSTSN) is in its fourth and final year of data collection. Extended funding was recently awarded by National Science Foundation (NSF) to support additional data analysis and dissemination of the project's findings. The project seeks to determine how to best help beginning teachers succeed at teaching and remain in the profession. NSTSN is a collaborative research project involving George Mason University, Fairfax County Public Schools, Prince William County Public Schools, and Arlington Public Schools. Dr. Donna R. Sterling is the principal investigator, and Dr. Wendy Frazier is the program manager. For more information please check online: <http://gse.gmu.edu/centersoffices/crest/researchprograms/nstsn.htm>

Teachers Assist in Mason Science Methods Courses

Many thanks to the following inservice teachers from Fairfax County Public Schools for serving as technology specialists in EDCI 673 for spring 2007: Jim Jarvis (Earth science) Thomas Jefferson HS, Donna West (chemistry) Woodson HS, Tony Rugari (physics) Edison HS, and Debbie Meinholdt (biology) Edison HS. Their expertise helps to make Mason's advanced science methods course for preservice teachers based on authentic practice.



Awards

- Alex Workman received the 2007 Science Education Award for master's degree students.
- Christine Rauch McDaniel received the Teacher of Promise Award for science.
- Jeanne Bailey, CREST Business Manager, was awarded the *eVA Performance Recognition Award* from Mason's Fiscal Services.

Doctoral Students Teach Mason Science Education Courses

Amos Simms-Smith and Dawn Renee Wilcox are teaching EDCI 634: Advanced science methods for elementary teaching. The course focuses on inquiry and how children learn. Students also develop and incorporate a variety of skills to maximize the use of assessment and technology as well as awareness of gender/cultural issues via the nature of science.

Mollianne Logerwell is teaching EDCI 673 Advanced Methods of Teaching Science in Secondary School. The main focus for this course is (1) conducting action research to investigate strategies for meeting the needs of diverse learners and (2) learning effective ways to integrate technology into the classroom.

CREST Research Assistant

By Karen D. Dunn

I have worked as a GRA at CREST since May 06. Coming onto a project during the third year of the NSTSN study was a bit challenging. However, working with Wendy and Molli made the transition a valuable and positive experience for me in terms of my growth and development as a researcher. For example, prior to working at CREST, my exposure to research was limited. Previously, I had the opportunity to conduct a quantitative study as an undergraduate, so most of the work I did on the project initially involved quantitative data analysis. However, my knowledge of qualitative research methods was lacking. Therefore, I welcomed the opportunity to assist on the qualitative analyses, more recently. This experience has given me a greater appreciation of the value of qualitative research. I found the narratives to be extremely interesting and I realize that this data is invaluable in illuminating aspects of voice that are non-existent with quantitative data. Listening and hearing the voices of the participants during transcriptions provided me with a wealth of insight that I would have otherwise missed. My exposure to the mixed-methods design will certainly influence my own research in the future and I am thankful to CREST for this experience.

Elementary Science Education

This spring is a time for reflection. With the leadership of Dr. Lynne Schrum, program director of the elementary teacher preparation program, elementary faculty have been reflecting on the courses currently offered in the program and developing plans for future elementary teacher education efforts. Included in this plan is an expansion to Loudoun County and several grant proposals have been submitted to various funding agencies by CREST faculty and Lynne Schrum to expand science summer camp offerings and research.

Virginia Earth Science Collaborative

George Mason University is participating in the Virginia Earth Science Collaborative to support Virginia teachers in obtaining a teaching license in Earth Science. This collaboration of colleges and school divisions provides coursework designed to improve the quality of Earth Science instruction as well as meet licensure requirements for teaching. At George Mason University this summer, Dr. Rick Diecchio, with the assistance of Marty Lindemann (PWCS), will teach Physical Geology, and Dr. Harold Geller, with the assistance of Lee Ann Hennig (FCPS), will teach astronomy. For more information: <http://VirginiaEarthScience.info>

CREST Research Assistant

By Mollianne G. Logerwell

Over the past four years, I have been fortunate to work with an incredible group of people as I have learned to utilize my knowledge in new contexts. Since joining CREST in the fall of 2003, I have had numerous opportunities to apply and expand the skills I have learned in the classroom both as a teacher and a doctoral student. I have helped to create instruments, conduct interviews and collect other data, perform quantitative and qualitative analysis, write reports and journal articles, and make presentations at numerous state, regional, and national conferences. I have also been able to teach a methods course and serve on a faculty search committee at GMU. It has been a wonderful journey so far, and I am looking forward to continuing working at CREST while completing my dissertation.

Student Funding

- Mollianne Logerwell received a 20-hour graduate research assistantship to assist with CREST activities and to conduct research on NSTSN.

- Karen Dunn received a 10-hour graduate research assistantship to conduct quantitative research.
- Amos Simms-Smith, received a graduate research assistantship to conduct qualitative research.
- Manish Thakur is assisting at CREST as Database Manager and Webmaster.

Student and Faculty Presentations and Publications

- Wendy M. Frazier & Donna R. Sterling (2007, March). Weather Tamers. *Science Scope* 30(7) 26-31.
- Erin E. Peters (2007). Frugal equipment substitutions: A quick guide. *Science Scope*, 30(6), 64-65.
- Mollianne G. Logerwell, Wendy M. Frazier, & Donna R. Sterling (2007, January). Retired master science teachers: A valuable resource in science teacher education. Annual International Conference of the Association for Science Teacher Education 2007 Proceedings. Clearwater, FL.
- Amos Simms-Smith & Donna R. Sterling (2006, December) Mail time! Addressing student questions in science class. *Science Scope* 30(4) 59-60.
- Erin E. Peters & T. Johnson (2006). Thriving in the co-taught classroom. *Science Scope*, 30(4), 56-58.
- Erin E. Peters (2006). Building student mental constructs in particle theory. *Science Scope*, 30(2), 53-55.
- Mollianne G. Logerwell, Amos Simms-Smith, & Donna R. Sterling (2006, November). *How to Have a Safe and Successful First Year of Science Teaching*. Virginia Association of Science Teachers, Richmond, VA.
- Wendy M. Frazier (2006, November). *Poetry and Science Investigation*. Virginia Association of Science Teachers, Richmond, VA.
- Wendy M. Frazier & Donna R. Sterling (2006, November). *Problem-Based Learning: How to*

Make It Fun and Safe! Virginia Association of Science Teachers, Richmond, VA.

- Erin E. Peters (2006). Why is teaching the nature of science important? *Journal of Science Education in Virginia*, 1(1), 55-58.

CREST Welcomes Jeanne Bailey

This academic year we welcome Jeanne Bailey to CREST. Jeanne has worked in Mason's Office of Sponsored Programs and the Student Accounts Office and brings a wealth of budgetary and administrative expertise to the center. From scheduling and ordering supplies via the state's purchasing system to drafting budgets for proposals, Jeanne's wealth of knowledge and skill is greatly appreciated – THANK YOU, Jeanne!

Center for Restructuring Education in Science and Technology

The [Center for Restructuring Education in Science and Technology](#) (CREST) at [George Mason University](#), focuses on providing quality science, mathematics, and technology education from early childhood through adulthood.

Director: Donna R. Sterling
Assistant Director: Wendy M. Frazier

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