



Science Education

The University of Arkansas College of Education and Health Professions is committed to improving the state of science teaching and learning through the preparation of science educators for careers in the classroom, as curriculum developers, policy leaders, and as professors of science education.

William F. McComas, Ph.D. in 2006 became the inaugural holder of the *Parks Family Endowed Professorship in Science and Technology Education*. He is involved in many areas of science education research and policy development with leadership roles on the Boards of the *National Science Teachers Association*, the *International History, Philosophy and Science Teaching Group* and the *Association for Science Teacher Education*. Dr. McComas is widely published in the areas of the history and philosophy of science. He is the recipient of the NABT Evolution Education award, the Ohaus honor for college science teaching innovation, and the ASTE award as Outstanding Science Teacher Educator.

Michael Wavering, Ph.D. is an associate professor with interests on the development of students' logical reasoning in science; evolution instruction and in precollege teaching of the nature of science. He is the recipient of college and university awards for research and teaching and was instrumental in developing the American Association for Teacher Education award-winning Master of Arts in Teaching program. Dr. Wavering, is the recent recipient of an NSF-Noyce grant which will provide scholarships to students preparing to become mathematics and science teachers.

Cathy Wissehr, Ph.D. joined the COEHP faculty in 2009 as an assistant professor of elementary science education. Her research interests focus on teacher misconceptions, environmental education and science instruction in rural schools. She serves on the advisory panels for *Science and Children* and *The Rural Educator* and on the editorial board for the *Journal of Research in Rural Education*.

The University of Arkansas Center for Mathematics and Science Education is a vital element of our science education program. The CMASE outreach center offers professional development for pre-service and in-service teachers and supplies a wide range of science teaching curriculum materials and related resources.

<http://www.uark.edu/~k12info/>

Admission

Students seeking entry to any of the science education options discussed in this brochure must first apply for admission to the University of Arkansas Graduate School. Information is available online at <http://uark.edu/depts/gradinfo> or by calling (479) 575-4401 or (866) 234-3957.

Financial Assistance

Financial aid information is available at <http://uark.edu/admin/fininfo> or by calling (479) 575-3806. Information about scholarships from the College of Education and Health Professions may be found at <http://coe hp.uark.edu/scholarships.html> or by calling (479) 575-5117.

For information regarding science education at the University of Arkansas or to join our listserv, visit <http://scienceeducation.org> or contact:

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Science Education

The Department of Curriculum and Instruction in the University of Arkansas College of Education and Health Professions is home to the Project to Advance Science Education (PASE). PASE is dedicated to enhancing science instruction in the nation's education infrastructure. We engage in basic research, the preparation of science teachers for school service, and the development of science education leaders and professors who will positively impact science teaching in schools and in college and university settings.

Ongoing research endeavors include the investigation of the actual and ideal states of hands-on instruction, the application of constructivist learning theory in informal science learning environments, the identification of key science misconceptions among K-12 learners, problems with the observational skills of students in laboratory settings, the determination of core elements of the nature of science and the design of instructional methods for enhancing understanding of the history and philosophy of science.

Science Education Courses

The M.Ed. and Ph.D. degrees with a focus in Science Education feature core graduate classes (CIED 6313, 6333 and 6343) and several options:

- CIED 6313 Issues, History and Rationale of Science Education (3 credits)
- CIED 6333 Nature of Science: Philosophy of Science for Science Educators (3 credits)
- CIED 6343 Advanced Science Teaching Methods (3 credits)
- CIED 5510 Science Instructional Strategies (1-6 credits)
- CIED 6323 Science Seminar (Independent study)

For full course descriptions, please consult the syllabi posted at <http://scienceeducation.org>.

Graduate Degree Programs

The Department of Curriculum and Instruction offers three graduate degree programs for those interested in science teaching and learning:

The MASTER OF ARTS IN TEACHING (M.A.T.) with a focus in secondary science teaching is a one year intensive program leading to an Arkansas teaching credential and a master's degree. Some prerequisites must be completed before entry along with the successful completion of the Praxis I examination. This is the degree of choice for those who plan to teach in grades 7-12. Interested students should contact Dr. Michael Wavering (wavering@uark.edu).

The MASTER OF EDUCATION in Secondary Education (M.Ed. SEED) degree program provides options to focus in a variety of fields including science. This advanced professional coursework is designed for educators who already hold teaching credentials for service in PK-12 environments and for educators who do not require formal licensure such as those working in community colleges, informal educational settings such as zoos, nature centers and museums, private schools, or business-based educational enterprises.

The M.Ed. is primarily designed as a non-thesis program but students with prior experience in the design of a research study, a thesis option exists. M.Ed. students will take an additional 6 credits of education courses in the College of Education and Health Professions or science content courses from the J. William Fulbright College of Arts and Sciences.

All students – including those with interests in elementary and postsecondary education – should apply for the M.Ed. in secondary education (SEED) and note an interest in science education on the application.

Completion of the M.Ed. will enable educators to:

- Engage in a range of professional development opportunities through completion of a general core of educational studies along with focused experience in science education.
- Enter the state-wide and national network of science educators. Gain enhanced ability and practice skills both as a teacher and educational leader.
- Acquire a broad and deep knowledge of curriculum models, educational programs, instructional standards, human growth and development and learning theories.
- Understand and impact science teaching by gaining knowledge of its history, nature and trends.
- Expand content knowledge with courses in the discipline (where appropriate and practical).
- Integrate theory and practice.
- Demonstrate leadership in the application of research and inquiry skills to analyze and evaluate trends, problems and practices in science teaching and learning.
- Expand knowledge of the diversity of learners and plan instructional experiences responsive to the intellectual, psychological, social and physical needs of individuals.
- Use the M.Ed. degree as a gateway to the Ph.D. (for service in research or higher education positions) or the Ed.D. (for service in educational administrative roles).

The DOCTOR OF PHILOSOPHY (Ph.D.) degree in Curriculum and Instruction emphasizes the generation of new knowledge or the reformulation of existing knowledge as the basis for the development of educational theory and practice.

The Ph.D. is designed for highly motivated individuals with interests in improving science teaching and learning through service in research and/or faculty positions in higher education or in leadership roles in school science teaching environments. The degree provides rigorous coursework and mentorship experiences in research methods, internships in teaching and research supported by the three core integrated science education classes.