

A Novel Earth & Space Science Teacher Preparation Program

University of Arizona College of Science

Teacher Preparation Program

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http://scied.mcb.arizona.edu/TPP_home.html

Challenges in Preservice Science Teacher Education

- Recruitment into the profession
- Early departure from teaching
- Nationally, College of Education faculty have little real classroom teaching experience and limited scientific backgrounds
- English is second language for many learners
- No Child Left Behind (NCLB) Legislation
 - National emphasis on reading and math, not science
 - High stakes testing accountability without regard to students' socioeconomic status or opportunity to learn
 - Highly varied definition of highly qualified teacher
- Oh, yeah, I almost forgot, -- preservice teachers need to be *schooled* in science concepts AND how to teach science!

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What can you do?

TPP Core Understandings

Prospective teachers will:

- 1. Demonstrate understanding of their science disciplines and the nature of science. They will understand science deeply enough to build alternative representations of scientific knowledge that are pedagogically sound and meaningful for a diverse group of learners.**
- 2. Demonstrate a solid understanding of how adolescents learn and develop. They will display a philosophy of teaching that focuses on student understanding.**
- 3. Make coherent curriculum decisions that promote student engagement in learning and understanding of science. They will plan, implement, and assess lessons using learning goals to guide their choices and actions.**

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Prospective teachers will:

- 4. Create and manage a productive learning environment that fosters the development of student understanding.**
- 5. Establish clear communication and positive interactions with learners, colleagues, administrators, and parents. They will be comfortable interacting with members of these groups and actively work to become a part of the school culture.**
- 6. Acknowledge the complex and often unpredictable contexts in which teachers work. They will manage the complexity in ways that support and sustain student learning.**

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Traditional College of Education Courses in Science Teacher Preparation

- 1. Introduction to Teaching**
- 2. History and Philosophy of Education in America**
- 3. Educational Psychology I**
- 4. Educational Psychology II**
- 5. Educational Technology**
- 6. Exceptional Children in the Classroom**
- 7. Reading in the Content Area**
- 8. Science Teaching Methods**
- 9. Student Teaching Experience (8 Weeks)**

30 hrs of coursework in College of Science

STCH 250 (*includes 20 hrs of field-experience*)

- Introduction to Science Teaching 3 hr.

STCH 300 (*includes 20 hrs of field-experience*)

- Adolescent Development and Learning Science 3 hr.

STCH 410 (*includes 40 hrs of field-experience*)

- Science Instruction in the Secondary Schools 4 hr.

STCH 420 (*includes 40 hrs of field-experience*)

- Curriculum Decisions & Assessment in Science 4 hr.

ASTR/BIO/GEO/PHYS 401

- Content Specific Teaching Methods 3 hr.

18 Week Science Teaching Practicum 13 hr.

Students' structured field-experiences throughout program exceed 120 hrs prior to student teaching experience

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Distinctive Features of Our Science Teacher Preparation Program

Extensive Stakeholder Collaborations

- *Teachers-in-Residence Program*
- *Mentor Teachers Meet Monthly and Over the Summer*
- *Classroom Mentor-Teachers for Field Placements*

Distinctive Features of Our Science Teacher Preparation Program

Repeated Articulation of Core Understandings
Throughout the Program Experiences

- *Courses Employ a Seminar Format*
- *Extensive Classroom Field-Experiences*
- *Integrated Early Career Induction Program*

Distinctive Features of Our Science Teacher Preparation Program

Science-Specific Focus on Pedagogical Preparation

- *All Courses Taught by Science Faculty with Expertise and Scholarship in Science Education*
- *Program is an Enterprise of the College of Science*
- *Recruiting is Not So Hard:
BS Science Education from CoS
or Minor Degree Program attached so science degree*

Distinctive Features of Our Science Teacher Preparation Program

Enjoy High Enrollments

- *90 students (currently in our third year)*
- *Expect to Double the Number of Students Next Year*
- *Expect a steady state of 40 graduates per year*

Some of Our Intellectual and Academic Dilemmas

*The Experienced Science-Teacher-in-Residence as
Pedagogical Expert in an Unfamiliar Context*

*The Classroom Teacher as Mentor in an
Uncharted Enterprise*

*The Dual Citizen Role of the Core Program
Faculty*

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