

YOU ARE INVITED TO:

Summer 2012 Portland Metro STEM Partnership

Elementary Professional Development



Intel STEM Center for College and
Career Readiness

The Intel STEM (Science, Technology, Engineering, Math) Center for College and Career Readiness is part of a collective impact partnership between local school districts, higher education, businesses, community groups and informal education. Through this partnership, the Intel STEM Center will compile and disseminate information, research, and resources that serve the needs of schools in partnering districts to have all students college and career ready. Part of the Intel STEM Center's focus is to provide professional development to all teachers in the area of STEM education.

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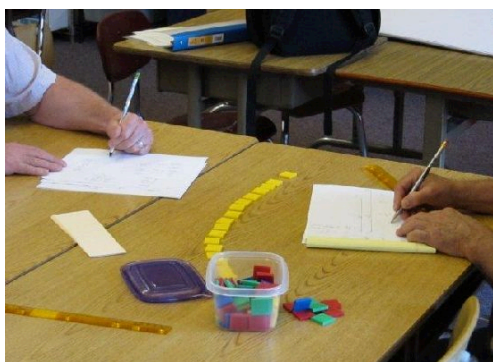


Elementary Course Registration Information

Pre-Registration Link: (Copy and paste link into browser)
<http://www.goo.gl/Rlq6d>

Please use the link to pre-register for courses. Pre-registration reserves your spot in the class. Information for formal registration and final class information will be available in May. Online summer registration for credit at PSU begins May 7th. Pre-registered participants will receive a reminder via email.





STEM Summer Course Key Components

1. Creates a collaborative co-instruction between Portland State University faculty and Teachers on Special Assignment (TOSAs) or Teacher Leaders. The different professional backgrounds, different experiences with teachers and students, and different pedagogical styles of the co-instructors provide diverse and enriching instruction.
2. Focuses on standards-based mathematical and/or scientific content knowledge central to developing mathematical and scientific proficiency in teachers.
3. Uses a guiding inquiry to frame and motivate the course and provide a unifying thread for learning that allows participants to develop habits of mind as mathematicians and scientists.
4. Attends to both content and pedagogy and the ways in which pedagogy can support the learning of content.
5. Brings together teachers with varying levels of experience and prior knowledge.
6. Provides on-going support through academic year follow-ups with opportunities to do more math and science, collaborate with peers, refine lessons/units, analyze student work, and gather more teaching ideas.

SCI 510: Bringing STEM to K-2 Literacy

August 20th- August 24th Monday- Friday (3 credits) w/3 Follow-Up Sessions 2012-13 (1 credit)

Time: 9:00am- 4:00pm Location: Intel STEM Center

Instructors: Erika Hansen, Nancy Lapotin, & Sybil Kelley, Assistant Professor, Graduate School of Education

Summer Session: 3 PSU graduate credits

Note: 2012-13 School Year Follow-Up Sessions for 1 additional PSU Grad credit

Course Description:

The K-2 STEM Literacy course is designed to offer classroom teachers practical, hands-on opportunities to deepen their content knowledge and examine research-based pedagogical strategies at the elementary level. Classroom teachers will work collaboratively to develop a standards-based integrated unit, connecting science and literacy instruction/learning within a primary classroom setting. Emphasis will be placed on creating inquiry and/or engineering units that engage students in scientific discourse, incorporate the skills of scientific inquiry, enhance problem solving, and encourage all students to participate in learning through the integration of science and literacy. Sheltered instruction and assessment FOR learning will also be applied within this course. This course is continued into the school year for 1 additional PSU graduate credit.

SCI 510: Connect2Science Through Nature

August 13th- August 16th Monday- Thursday (2 credits) w/3 Follow-Up Sessions 2012-13 (2 credits)

Time: 9:00am- 4:00pm Location: Tryon Creek Nature Center

Instructors: Stephanie Wagner, CSE Faculty, and Jamie Makara

Summer Session: 2 PSU graduate credits. Note: 2012-13 School Year Follow-Up Sessions for an additional 2 PSU graduate credits

Course Description:
Science is all around us. Learn how to use nature to engage your students in inquiry based science learning. This course will address the 2009 Oregon Science Standards and methods for engaging students by utilizing outdoor experiences to encourage observation and inquiry based science learning. An introduction to nature journaling techniques and the assessment of Science Inquiry work samples will also be covered. Participants will develop lesson plans for an inquiry unit to be taught during school year 2012-13. Support will be available from instructors during the implementation of the inquiry unit. The summer class (2 credits) is the first part of a 4-credit class. We will be meeting an additional three times for the remaining 2 credits after school from 4:30-8:30 pm at the Tryon Creek Nature Center on the following Thursdays Nov. 15, 2012, Feb. 21, 2013 and May 16, 2013.

SCI 510: Integrating STEM Crosscutting Ideas Using *The Private Eye*® Program

July 23rd- July 26th Monday-Thursday (2 credits) w/3 Follow-Up Sessions 2012-13 (1 credit)

Time: 9:00am- 4:00pm Location: Intel STEM Center

Instructors: Carol Biskupic Knight, Kerry Ruef and David Melody of *The Private Eye*®, and Sherry Cady, Professor of Geology

Summer Session: 2 PSU graduate credits. Note: 2012-13 School Year Follow-Up Sessions for an additional 1 PSU graduate credits.

Course Description:
In this course, elementary teachers will apply crosscutting ideas of analogies, patterns, scale and proportion, systems and models, and structure and function throughout science, math, and literacy using *The Private Eye*® program, an interdisciplinary program. The focus will be on embedding the use of a jeweler's loupe and questioning strategies into STEM content areas and scientific and mathematical practices to enhance students' ability to: 1) develop motivational bridges between content areas; 2) make investigation into content areas simpler, but sophisticated and scholarly; 3) develop students who naturally write-across-the curriculum with high-level results. Teachers will be trained to use jeweler's loupes to engage their students in journal writing and drawing to explore the world in a new way. Additionally, teachers will develop lesson plans that incorporate *The Private Eye*® process and activities to address specific learning targets for elementary students in STEM areas, per the Oregon Science Standards and Common Core for Math and for English Language Arts & Literacy. As part of the course and a technology grant, participants will receive a class set of jeweler's loupes and a *Private Eye*® class starter kit for up to 30 students.

Theory to Practice in School Gardens

June 18th- June 28th Monday- Thursday w/3 Follow-Up Sessions 2012-2013

Time: 9:00am- 12:30pm (Student Programming 9:30am -11:30am) Location: Sun School Sites (Lane, Kelley, Lent, & Woodmere)

Instructors: Nancy Lapotin, Sybil Kelley, Assistant Professor, and Dilafruz Williams, Professor, Graduate School of Education

Summer Session: 4 PSU graduate credits Note: 2012-13 School Year follow-up sessions to complete course requirements. (This course can be taken independently or in conjunction with "Connect to Science Through Learning Gardens".)

Course Description:
Educators from various contexts and in various stages of professional development (in-service teachers, pre-service teachers, extended-day/SUN school teachers, informal science educators, etc.) will join forces to put research-based science education into practice. Each day, educators will work with K-8 students at one of four partnering SUN schools in outer SE Portland (Lane, Kelley, Lent, or Woodmere). Collaboratively designed STEM programming will focus on the implementation of standards-based curriculum, the effective use of formative assessments and the use of hands-on, inquiry-based activities with elementary students. In addition, the student program will further connect the school day and extended day programming at each site by utilizing school gardens as a context for teaching and learning.

Connect to Science Through Learning Gardens

June 18th- June 28th Monday- Thursday w/3 Follow-Up Sessions 2012-2013

Time: 1:00pm- 5:00pm Location: Learning Gardens Laboratory

Instructors: Nancy Lapotin, Sybil Kelley, Assistant Professor, and Dilafruz Williams, Professor, Graduate School of Education

Summer Session: 4 PSU graduate credits Note: 2012-13 School Year follow-up sessions to complete course requirements. (This course can be taken independently or in conjunction with "Theory to Practice in School Gardens.")

Course Description:
Educators from various contexts and in various stages of professional development (in-service teachers, pre-service teachers, extended-day/SUN school teachers, informal science educators, etc.) are encouraged to take advantage of this opportunity to learn theory and best-practices of science and sustainability education, then put this understanding into practice by designing curriculum that utilizes learning gardens (at schools and/or community sites) as a context for STEM learning and teaching. The course will specifically focus on developing standards and inquiry-based curriculum that integrates content, formative assessments, and experiential learning activities that effectively integrates content through the context of school gardens.

Connect2Math: Numbers & Operations

June 25th- June 29th Monday- Friday w/3 Follow-Up Sessions 2012-13

Time: 9:00am- 4:00pm

Location: Sylvan Middle School

Instructors: Carol Biskupic Knight & Phyllis Leonard

This course is being offered free of charge as part of a Math and Science Partnership Grant. Course credit will be available at the regular PSU tuition rate as an SCI810 class (3 PSU graduate credits).

This course focuses on how students learn the basic operations (addition, subtraction, multiplication and division) and develop and make sense of computational algorithms as they extend from whole numbers to decimals. Also examined are the important foundations of place value, properties of operations, and number systems. Participants will learn to distinguish between misconceptions and error patterns in student thinking and will learn to orchestrate productive mathematical discussions through carefully planned lessons. They will create lessons that integrate technology and other tools to support students' learning of the Common Core Standards and Mathematical Practices.

Connect2Math: Geometry & Measurement

August 6th- August 10th Monday- Friday w/3 Follow-Up Sessions 2012-13

Time: 9:00am- 4:00pm

Location: Sylvan Middle School

Instructors: Chris Steiner & Roxanne Malter

This course is being offered free of charge as part of a Math and Science Partnership Grant. Course credit will be available at the regular PSU tuition rate as an SCI810 class (3 PSU graduate credits).

Common Core Mathematical Content and Practices in Measurement and Geometry will be the focus of the knowledge and skills addressed in this course. Topics include applying mathematics for teaching geometry and measurement in K-8; emphasis on understanding a variety of problem solving strategies; and deductive reasoning and a focus on geometric shapes' rigid motion: length, area, volume, and their measurement and connection to numbers and operations. The course will include strategies for student acquisition of mathematical academic vocabulary and conversion in measurement units using a constructivist approach.

Connect2Science: Physical Science

July 30th- August 3rd Monday- Friday w/3 Follow-Up Sessions 2012-13

Time: 9:00am- 4:00pm

Location: Sylvan Middle School

Instructors: Carol Biskupic Knight & Marilyn Mackiewicz, Research Assistant Professor of Chemistry

This course is being offered free of charge as part of a Math and Science Partnership Grant. Course credit will be available at the regular PSU tuition rate as an SCI810 class (3 PSU graduate credits).

This course focuses on the science content of the Physical Science concepts of the Oregon Science Standards: Forces and Motion, and Matter (Solids, Liquids, Gases, Atoms and Chemical Change). Participants experience the science content embedded in inquiry and engineering design activities to understand the knowledge and skills of physical science. Participants will model concrete representations of abstract or "invisible" concepts and age-appropriate applications will be developed.

Connect2Science: Earth and Space Science

June 18th- June 22nd Monday- Friday w/3 Follow-Up Sessions 2012-13

Time: 9:00am- 4:00pm

Location: Sylvan Middle School

Instructors: Chris Steiner & Cary Sneider, Associate Research Professor, Center for Science Education

This course is being offered free of charge as part of a Math and Science Partnership Grant. Course credit will be available at the regular PSU tuition rate as an SCI810 class (3 PSU graduate credits).

Earth and Space Science "Big Ideas" of Objects in the Universe, Matter and Energy, and Properties of Earth Materials are addressed in this course. Teachers will increase their confidence in uncovering student ideas in science and misconceptions associated with Earth and Space Science concepts such as the reason for the seasons, weather patterns, interaction of the sun, Earth, moon systems and the changing Earth. Participants will model concrete representations of abstract concepts.

STEM Summer Course Guiding Principles

- Alignment of all courses and professional development to standards-based instructional practices.
- Focus on increasing teacher content knowledge and pedagogical practices in STEM.
- Implementation of research-based practices to increase student achievement in STEM and decrease the achievement gap in under-represented students.
- Instruction and modeling of equity-focused group work practices
- Providing teachers with strategies that promote career and college readiness (Conley, 2010): Key Cognitive Strategies, Key Content, Academic Behaviors, Contextual Skills and Awareness)
- Developing teachers as researchers within their own classrooms.
- Networking among teachers, university professors, business leaders, community and informal education resource personnel
- Use of shared measurement systems to identify teachers' increase in content

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Registration information will be available at:

<http://www.pdx.edu/registration/registration-basics>

Summer tuition rates will be posted at: <http://www.pdx.edu/bao/tuition-fees>

Further Course or STEM Center Information: www.pdxstem.org

Questions: Contact the Center for Science Education at
(503) 725-4243 or e-mail

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