

# CEMaST NEWS

## OF INTEREST TO STUDENTS & TEACHERS:

Funds available to support  
future teachers

Information on how to  
become a single subject  
teacher

Spectroscopy Simulation

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Cal Poly Pomona

# CEMaST

Center for Excellence in Mathematics and Science Teaching

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## Dr. Selco Selected for 2019 Wall of Cool

Dr. Jodye Selco, from the College of Science, CEMaST and Chemistry & Biochemistry, was selected for the 2019 Wall of COOL (Celebrating Outstanding Opportunities for Learning). The Wall of COOL celebrates exemplary technology-infused and enhanced course development by Cal Poly Pomona faculty. To find out more about the Wall of COOL please visit their website at <https://elearning.cpp.edu/cool/>.

Dr. Jodye Selco's CHM 3010, Modeling the Fundamentals of Physical Chemistry, was the highest-rated course in Wall of COOL for 2019. The transformation of a small hybrid course serving a few local students to a fully online course that can serve over 100 students across

the CSU is amazing. The course was designed and created with great care and attention to student learning, especially important given its challenging material. The technical features of this course include a heavy hands-on use of Excel which is a powerful professional and learning tool, and the high quality "Lightboard" videos which deliver a lot of the content in an engaging way.

According to Director Victoria Bhavsar, from the e-Learning team, "The pedagogical features of the course which support student success include its emphasis on clarity, organiza-



Dr. Jodye Selco

tion, and interactive learning – important but hard to provide in an asynchronous online course, and Jodye achieved it – providing different means of delivering material so that students can either pick and choose or experience multiple methods of instruction." Congratulations to Dr. Selco for her outstanding work!

## CEMaST Brown Bags

By Qing Ryan

CEMaST will host four brownbag STEM-Education seminars this academic year. In the fall, we had Dr. Steve Alas talk about the various aspects of the SEES (Science Educational Enhancement Services) program and the assessment of its impact on student success. Next, Prof. Stacy Musgrave from the Department of Mathematics and Statistics discussed an NSF-funded mentoring program that she leads for women in the RUME (Research in Undergraduate Mathematics Education) community.

Looking towards Spring 2019, we expect to host two more seminars on the following topics:



Dr. Nicole Wickler will give us an overview and insights from the RESPECT Program (Reinvigorating Elementary Science through a Partnership with California Teachers). RESPECT is a large-scale research study funded by the National Science Foundation.

Dr. Paul Beardsley will summarize available studies on the psychological and social factors for students in STEM at CPP and how the newly NSF-funded PASSION project (Polytechnic for All: STEM Success via an Inclusive Institute) will add to this body of knowledge.

Dates and locations will be announced as they become available. Keep a lookout on the CEMaST website for details.



*MSTI seeks to encourage talented Science and Mathematics majors who are considering secondary teaching.*

## Interested in a Career in Teaching?

To become a math or science teacher in California you must obtain a Single Subject Teaching Credential. This credential authorizes public school teaching in a departmentalized classroom such as those in most middle schools or high schools. To obtain a Preliminary Credential the following requirements must be met:

- Bachelor's Degree or higher from an accredited university.
- Completion of a teacher preparation program (credential program, including student teaching)
- Meet the Basic Skills Requirement (CBEST exam)
- Demonstrate subject matter competency by passing the California Subject Examinations for

Teachers (CSET) or completion of approved single subject program.

Cal Poly has an approved single subject program for mathematics and science as well as a credential program. For more information or for an advising appointment please contact CEMaST at [cemast@cpp.edu](mailto:cemast@cpp.edu).

## Scholarship Funds Available

Dr. Nicole Wickler has announced that scholarship funds are available for the 2018-19 academic year through the Math and Science Teacher Initiative (MSTI) Scholarship Program. The program's objective is to support talented Science and Mathematics majors who might not have considered the teaching profession. Each MSTI Scholar can receive up to two years of scholarships, up to \$5,000 per year. MSTI Scholars are selected on the basis of academic achievement, under-representation and financial need. MSTI Scholarships are available to those seeking a single subject credential in Biology, Chemistry, Geology, Mathematics, and Physics. Scholarships will be awarded on a competitive basis and there are minimum requirements for undergraduate students.

They include:

- A declared Cal Poly major in a Mathematics or Science discipline.

- At most two years remaining to complete a bachelor's degree.
- An overall GPA of 3.0 with a preference given to those who have a GPA no lower than 3.0 in their major.
- Be a US citizen, national or permanent resident alien.

### For Credential Candidates –

- Be enrolled in, or have applied to enroll in, one of Cal Poly Pomona's single subject credential programs in Mathematics or Science.
- Have subject matter competency through prescribed coursework or passing the appropriate CSET.
- Have an overall GPA of 3.0 with a preference given to those who have a GPA no lower than 3.0 in their major.
- Have an overall GPA of 3.4 in credential coursework.
- Be a US citizen, national, or permanent resident alien.

The deadline for the fall semester is May 20, 2019. For more information and to apply please visit the website <http://www.cpp.edu/~msti/msti-scholarship/index.shtml>



# CMP@CPP

By Stacy Brown and Robin Wilson

This fall, the California Math Project at Cal Poly Pomona (CMP@CPP) has continued to provide professional training for K-12 teachers from around the region. The goal of the CMP@CPP site is to help local teachers, principals, and district leaders to develop their capacity to provide the students they serve with a rich, rigorous, and coherent mathematics curriculum. We do this by working to increase both mathematical content knowledge and pedagogical content knowledge while at the same time promoting equitable teaching practices. The activities of the CMP@CPP occur one Saturday each month during half-day workshops, and a Summer Institute that takes place over the course of one week at the end of the academic year. Our community is unique in that we bring together Elementary, Middle School, High School, Special Ed, Continuing Ed, Pre-service and College teachers in the same room to develop as practitioners, who recognize common connections in the material we teach at different grade levels and who honor the fact that we all teach the same students, just at different stages of development.

This Fall our Saturday workshops started off with a three-part series on **Mathematical Modeling in the K-12 classroom**. These workshops sought to extend the work of the IMMERSION Project, a collaboration between Pomona Unified School District and Harvey Mudd College led by Rachel Levy, which focused on designing and understanding mathematical modeling in the K-6 classroom in ways that honor children's reasoning while also connecting to university level mathematical modeling and the activities described in the national GAIMME (Guidelines for Assessment and Instruction in Mathematical Modeling Education) report published by SIAM (Society for Industrial and Applied Mathematics). The first workshop in the series, which was led by Robyn Stankiewicz-Van Der



Dr. Brown at a CMP workshop

Zanden of Pomona Unified School District, focused on *Designing Math Modeling Activities* for the K-12 classroom. The second workshop, which was co-led by Robyn Stankiewicz-Van Der Zanden and Laura Pahler of Pomona Unified School District took on the theme of *Navigating the Challenges of using Math Modeling Tasks in the Classroom*. Wrapping up the series, Robyn Stankiewicz-Van Der Zanden led a third workshop on *Assessing Students' Math Modeling Activities*. These workshops were well attended and received positive feedback from participants. All teachers left with hands on experience engaging in mathematical modeling tasks and with an understanding of the teaching and assessment practices that are unique to mathematical modeling in the K-12 classroom.

The monthly CMP@CPP Saturday Workshops will continue in Spring 2019 with more opportunities for teachers to collaborate, learn, and grow together around math content, pedagogical skills, and equitable teaching practices. We are especially excited about the February 2<sup>nd</sup> and March 9<sup>th</sup> workshops, during which we will provide a two-part series on *Mathematics Education and English Language Learners*. All are welcome to attend. Feel free to join us!

**Teachers  
can apply  
for mini  
grants up  
to \$500!**

# FEDCO Mini-Grant Program for Local Teachers

*By Nicole Wickler*

The California Community Foundation awarded Cal Poly Pomona - CEMaST \$40,000 to distribute to local full-time K-12 public school teachers FEDCO Classroom Enrichment Mini-Grants. The FEDCO program supports hands-on, field trip projects that “bring learning to life” and increase student academic achievement. Mini-Grants are designed to encourage experiential learning and enhance student understanding in relation to the curriculum standards in one of the core subject areas of language arts, social studies, mathematics or science.

The availability of FEDCO Classroom Enrichment Mini-Grants was publicized via email, website postings, and paper fliers. Electronic and paper fliers advertised the availability of funds, indicated how teachers could apply and the rubric for how proposals would be scored. Email messages with these fliers attached were sent to teachers, principals and superintendents in the eligible districts. Notices were also posted on the Cal Poly Pomona (CPP) CEMaST website in the College of Science.

Teachers may apply for mini-grants of up to \$500 or collaborate with other teachers in their school and submit a joint application of up to four teachers for a total of \$2000 maximum. CEMaST received 65 applications this year from numerous local school districts! The application period was open from August 15, 2018 to Octo-

ber 15, 2018. In early November 2018, the FEDCO Review Committee, which consisted of past winners, reviewed, discussed and rated the applications before making the final decisions. CEMaST was able to fund 31 grants involving 79 teachers. The funds will be distributed to the winning teachers in early-December 2018. All funds must be expended by April 30, 2019 and grant winners are required to submit a two-page narrative report, including a summary of the students' accomplishments and an expense report by May 16, 2019.

Last year CEMaST received 65 applications and funded 25 grants involving 84 teachers; 1,360 students in San Bernardino County and 1,724 students in the eastern portion of Los Angeles County. Several projects chose to visit Riley's Farm, the California Science Center, the Aquarium of the Pacific, the Museum of Tolerance and CPPs Rain Bird BioTREK. Student understanding was enriched by activities and outings that would not have been possible without the FEDCO Classroom Enrichment Fund. The projects funded by the FEDCO mini-grants program allowed students to be involved in field-trip based, hands-on learning experiences that enriched their understanding of core subjects in ways that would not have been possible otherwise!



*Local students on FEDCO sponsored field trip*



# Lizard Spectroscopy Simulation



By Jodye Selco

This simulation helps students understand the difference between the absorbed and reflected wavelengths of visibly colored materials. Click on the lizards to place them in the frames from left to right. The easy part of this simulation is to order the colors from longer to shorter reflected wavelength. The reflected

wavelength is the color you see. Then comes the hard part – ordering the lizards from longest to shortest absorbed wavelength. See if you can solve this puzzle posted at: <https://elearning.cpp.edu/learning-objects/color-spectroscopy/>!

Jodye Selco developed this simulation with help from colleagues at Cal Poly Pomona's eLearning team.

Lizard Spectroscopy - Reflected Wavelength

Reflected Wavelength

Absorbed Wavelength

Order the below lizards from Longer to Shorter reflected wavelength.

Purple

Red

Blue

Yellow

Green

Orange

Reset

Check Answer



**Jodye Selco** is a Professor in the Center for Excellence in Mathematics and Science Teaching (CEMaST) at California State Polytechnic University, Pomona. She is actively involved in research in physical chemistry as well as the teaching and learning of chemistry by all students. Professor Selco has been working with the teachers in Rialto USD for many years and has developed many learning experiences in science for teachers and students in the Rialto USD which have been adopted by many other teachers.

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THE CENTER FOR EXCELLENCE IN MATHEMATICS AND SCIENCE TEACHING IS THE CENTRAL HUB THROUGH WHICH THE COLLEGE OF SCIENCE PROMOTES EXCELLENT AND EFFECTIVE STEM TEACHING AND LEARNING AT ALL LEVELS. OUR MISSION IS TO PROMOTE, PRACTICE, AND STUDY RESEARCH-BASED PRACTICES IN SCIENCE AND MATHEMATICS EDUCATION TO ENHANCE TEACHING AND LEARNING IN OUR COMMUNITY.

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The CEMaST Newsletter Committee welcomes news from faculty, students and teachers. Please contact Dr. Stacy Musgrave, [smmusgrave@cpp.edu](mailto:smmusgrave@cpp.edu), for information on how to be included in upcoming issues!