

## **\$2000 scholarships for teachers, to re-train for high-need STEM and CTE content areas**

On Monday, July 17, 2017 the Arizona Department of Education (ADE) issued an application form for \$2000 scholarships/grants to teachers who wish to re-train to teach physics, chemistry, and other high-need STEM and CTE subjects. A great opportunity!

**YOUR ACTION REQUESTED:** Give this note to high school and middle school science and math teachers, and encourage teachers to re-train to teach physics or chemistry during the next 3 years. Ask them to apply to the ADE at:

<http://www.azed.gov/hetl/pd-pilot-program/>

Teacher applications are reviewed by the ADE starting on MONDAY, JULY 31; and awardees are announced within 10 business days. If not all 150 awards are made, more scholarships are awarded later.

I will be glad to help teachers put together a good application. Reply to [jane.jackson@asu.edu](mailto:jane.jackson@asu.edu)

**OUR EXPERTISE:** ASU has excellent opportunities in physics and chemistry! We helped 70 out-of-field teachers to become Highly Qualified in physics, chemistry, or high school physical science, in our Federal ESEA “Improving Teacher Quality” grants from 2006 to 2010.

Overwhelmingly, teachers say that ASU Modeling Workshops are the BEST preparation to pass the AEP/NES physics test! Two or three ASU 3-week (90 contact hours) Modeling Workshops suffice, in many cases.

Modeling Instruction is deep content taught by effective pedagogy: interactive engagement.

**HISTORY** of the \$2000 scholarships/grants: Senate Bill SB1038 was signed into law in May, by Gov. Ducey. (Mike Vargas, physics teacher at Pinnacle HS, and I initiated the bill. See the picture of 5 of us who worked hard for it—below.)

**WHY PHYSICS?** The 3-page document: <http://modeling.asu.edu/AZ/AzCrisis-ForPrincipals.pdf> shows that we have a huge need: to DOUBLE the number of students who take high school physics in Arizona, to meet the national average of 40%. To do this, we need more physics teachers.

**PROFESSIONAL DEVELOPMENT COURSES:**

A \$2000 scholarship can pay for FIVE non-credit ASU Modeling Workshops. Teachers have these options (flexible!):

\* Each summer: 3 to 5 Modeling Workshops in physics & chemistry (2 or 3 weeks each).

- \* Fall semesters: physical science with math Modeling Workshop in late afternoon 1x/week.
- \* Spring semesters: MECHANICS Modeling Workshop at ASU in late afternoon, 2x/week.
- \* Fall semester 2017: a CHEMISTRY I Modeling Workshop on 9 Saturdays in Tempe (indicate your interest by e-mailing jane.jackson@asu.edu, 480-314-1522).
- \* Possibly online versions, if teachers want them (but the first course must be face-to-face. Dorm housing is available.)

Prerequisite courses at AZ community colleges are also good uses of scholarship funds. For physics: PHY111 and 112 (with labs). For chemistry: CHM 151 and 152 (with labs). Face-to-face is best, but Rio Salado CC has online versions.

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To help you understand our work, please see

- \* our 2-page Annual Report, at <http://modeling.asu.edu>
- \* evidence of effectiveness: <http://modeling.asu.edu/Evaluations/Evaluations.html> .

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BOTTOM LINE: Why?

Physics is the #1 shortage area of K-12 teachers - and has the highest turnover because of strains in the system and higher wages in the private sector. Arizona faces a crisis: **10% of public district high schools in Greater Phoenix do not have a physics teacher. 15% of rural AZ public district schools eliminated physics after the economic downturn.**

\* The most basic science is physics; it deals with the simplest systems, and therefore can use the most math -- and it makes math make sense. Physics is everywhere!

\* ONLINE physics is ineffective for most students; students get very little support -- and you can't do the 3-dimensional teaching that the ADE promotes, that is aligned with the NRC Framework for K-12 Science Education.

7-29-2017



Larry Dukerich, Mike Vargas, Earl Barrett, Jeff Hengesbach, Jane Jackson. Fall 2016