

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

As of Sept. 25, 2017, the ADE has awarded 83 \$2000 scholarships (out of 150 total for the next 3 years) to teachers to re-train to teach physics, chemistry, and other high-need STEM and CTE subjects. 67 scholarships are available. A great opportunity!

(I know of only 15 teachers who were awarded it for physics, and only 5 for chemistry. We need many more!)

**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/>

The ADE informs awardees within 10 business days.

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 AEPA/NES physics test! (This is probably true for chemistry, too.) Two or three ASU 3-week (90 contact hours) Modeling Workshops suffice, in many cases. The NES physics test has NO calculus, said a teacher who took it in 2017.

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

**SUBMIT A PLAN** in your application to the ADE:

**A) GET SUPPORT:**

\* You can download a letter to give your principal, at

<http://modeling.asu.edu/AZ/AzPhysicsCrisis-ForPrincipals.pdf>

\* Ask your principal to assign you to teach ONE section of physics or chemistry (whichever you are applying for) in the year right after you take a Modeling Workshop. You need NOT be certified in that content, and teaching it will firm up what you learn in the Modeling Workshop. That will help you pass the NES content test.

**B) TAKE PROFESSIONAL DEVELOPMENT COURSES** at ASU:

A \$2000 scholarship can pay for FIVE non-credit ASU Modeling Workshops (@ \$400 each), or one summer Modeling Workshop for ASU graduate credit.

Teachers have these options (flexible!):

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

- \* Spring semesters: MECHANICS Modeling Workshop at ASU in evenings, 2x/week.
- \* West Valley locations, if teachers want them. Tell Jane Jackson that you are interested.
- \* Possibly online versions, if teachers want them (but the first course must be face-to-face).

Our course schedule through 2021 is at <http://modeling.asu.edu/MNS/MNScourses2017-21.htm>.

HOUSING: ASU dorm housing costs about \$650 for 3 summer weeks. Campus parking costs \$40/month. Luxurious family housing in Scottsdale costs \$1000 for 1 month. Ask Jane Jackson to help you. Your school's Title II funds can pay for housing: ask your principal for \$1000/year.

Need a refresher? Prerequisite courses at AZ community colleges are also good uses of scholarship funds. For physics: trigonometry-based PHY111 and 112 (with labs). For chemistry: science majors courses CHM 151 and 152 (with labs). Face-to-face is best, but Rio Salado CC has online versions. The cost for each course is about \$360.

More info: [http://modeling.asu.edu/AZ/\\$2000scholarships-retrainSTEM.htm](http://modeling.asu.edu/AZ/$2000scholarships-retrainSTEM.htm)

Need advice? call Jane Jackson, 480-314-1522. [jane.jackson@asu.edu](mailto:jane.jackson@asu.edu)

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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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HISTORY of the \$2000 scholarships/grants: Senate Bill SB1038 was signed into law in May 2017, by Gov. Ducey. (Mike Vargas, physics teacher at Pinnacle HS, initiated the bill. See the picture of 5 of us who worked hard for it—below.) On July 17, 2017 the Arizona Department of Education (ADE) issued an application form for \$2000 scholarships/grants. Teacher applications are reviewed by the ADE starting on July 31.

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.

The 3-page document <http://modeling.asu.edu/AZ/AzCrisis-ForPrincipals.pdf> by Larry Dukerich & Earl Barrett shows that Arizona needs to DOUBLE the number of students who take high school physics, to meet the national average of 40%. To do this, we need more physics teachers.

(Update 9-26-2017. [jane.jackson@asu.edu](mailto:jane.jackson@asu.edu))



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