

**PSME
Enhanced Lottery Request
2016 – 2017 Academic Year**

PSME Total Request: \$59,700

Chemistry:

1. What are you requesting?

Chemicals and supplies for labs; Organic and inorganic chemicals, hazardous waste containers and labels and supplies for all chemistry laboratories. The funds requested here are required for normal operations of the laboratory program.

\$17,000 Chemicals: General Chemistry & Organic Chemistry; reagents used by students

\$ 6,000 Hazardous Waste Disposal Materials: Storage containers needed for chemical waste generated by students

\$15,000 Laboratory Supplies: Glassware (beakers, pipets, flasks, funnels, burettes)

\$38,000 Total Chemistry request

2. How many students will benefit from this purchase?

There are 10 different chemistry lab courses, approximately 30 laboratory sections per quarter catering to 1000 students- approximately *3500 students annually*

3. How does this enhance your Equity Goals?

The primary equity goal is to provide all students an educational experience that enhances students' understanding of the theoretical concepts discussed in lecture. Hands on experiments provide an additional learning mode that widens the modes of instruction and provides learning opportunities for a wider range of students. It also connects more abstract theory to the real physical environment experienced by students. Chemistry laboratory courses satisfy GE lab science requirements and support several Career and Technical Education programs.

4. How does this enhance your Student Learning Outcomes?

All chemistry course SLO's include an objective related to the laboratory component of the class. To satisfy these SLO's students need to engage in experimental protocols that employ the requested reagents, materials and supplies.

5. Was this noted on your Program Review?

Yes.

Engineering:

1. What are you requesting?

\$ 1,500 Engineering workstation materials; Circuit boards, electronic components, small tools, wire, and soldering kits for engineering experiment stations.

\$ 5,100 Engineering software licenses for introduction to engineering, electrical circuits, and engineering statics classes. Circuitlab software (\$2,100) provides support for the design and simulation of electronic circuits and SolidWorks (\$3,000) supports similar operations for mechanical systems. These software packages are widely used and compatible with software used in transfer institutions and commercial operations.

\$6,600 Total Engineering request

2. How many students will benefit from this purchase?

Approximately *3500 students annually* take engineering 10, 35, and 37 classes that would use these materials and software

3. How does this enhance your Equity Goals?

The engineering department has made significant strides in improving student success and equity. Part of this success has been due to the recent incorporation of hands on laboratory experiments and student design projects that allow students to more directly connect theoretical aspects of engineering with their personal knowledge and experiences. The experiments and projects allowed with this funding will provide additional learning experience that widens the mode of instruction and provides learning opportunities for a wider range of students.

4. How does this enhance your Student Learning Outcomes?

Engineering course SLO's include a component requiring the analysis, design, and building of useful systems, and the requested materials will help meet those objectives.

5. Was this noted on your Program Review?

Yes.

Geology:

1. What are you requesting?

\$ 800 Hand Lenses; small hand magnifying glass and lanyard; replacement for lost, worn, and broken lenses used by students in mineral and rock identification in laboratory and field settings.

\$ 600 Printer Supplies and Accessories; image drum and cartridges for specialized large format printers used by students in geology laboratory to create geological and topographic maps

\$ 1,600 Rock Samples; thin section rock samples used by students in laboratory settings to identify rock and mineral types

\$ 3,000 Total Geology request

2. How many students will benefit from this purchase?

These materials will be used by all geology students- approximately *700 students annually*

3. How does this enhance your Equity Goals?

The primary equity goal is to provide *all* students an educational experience that enhances students' understanding of the physical world around them. In class experiments and field trips provide a learning experience that widens the modes of instruction and provides learning opportunities that appeal to a wider range of students. Geology laboratory courses satisfy GE lab science requirements and are an accessible and popular way for students to meet these general education requirements.

4. How does this enhance your Student Learning Outcomes?

All geology course SLO's include an objective related to the recognition, understanding, and appreciation of the physical world around them. The requested items are directly used to enhance those objectives by providing tools needed for recognizing and understanding various geological phenomena.

5. Was this noted on your Program Review?

Yes.

Mathematics:

1. What are you requesting?

\$ 2,800 Statistics Software; annual Minitab licenses for two statistics laboratories. Minitab is used by multiple statistics sections and for the Math Performance Success (MPS) and Statway programs. Common articulation agreements now require a technology component for the statistics courses, which is met by the use of this software

\$ 2,100 Mathematical Modeling and Visualization Software; Matlab license for one mathematics laboratory. This software can be used as a supplement in all math courses above the Math 210 level.

\$ 1,600 Basic Calculators; the TI-30X calculator, which costs less than \$20, is used in all developmental level math classes below Math 114. The calculators will be provided a pool for in class use (for exams, group work, and laboratory work), and will assist basic skills students who would not otherwise have access to calculators or neglected to bring them to class.

\$4,200 Graphing Calculators; the TI-84 graphing calculator is required for Math 114 and Math 10 as well as for many other math classes. These calculators will be used for in-class work, for MPS and Statway students and for other students who lack access to a calculator.

\$ 10,700 Total Mathematics request

2. How many students will benefit from this purchase?

The Minitab software would be used by approximately 8 Math 10 (Statistics) sections per quarter or about *1200 students per year*.

The Matlab software has a potential pool of users that includes almost all math students above Math 10 (approximately 15,000 per year). Used as a specially scheduled lab resource by multiple classes, it might practically serve around *3,000 students per year*.

The basic calculators would serve about *500 basic skills math students per year*.

The graphing calculators would be used by about *250 students per year*, however, they would be of great importance to those with great financial need.

3. How does this enhance your Equity Goals?

These requests will enhance our efforts to improve equity by providing learning tools to students in special programs (MPS and Statway) with the demonstrated ability to enhance student success and equity. The calculators will provide students with great financial need with resources available to other students. The MatLab software will also allow students to better visualize mathematical concepts and to "play" with mathematical constructs in an interactive manner. This will provide a wider range of

learning modes and will reach students who might otherwise not respond to traditional explanations.

4. How does this enhance your Student Learning Outcomes?

All math class outcomes include requirements involving computation and mathematical visualization and communication through charts and graphs. The calculators and software provide necessary tools that enhance the achievement of these SLO's.

5. Was this noted on your Program Review?

Yes.

Physics:

1. What are you requesting?

\$ 1,400 Replacement of Worn and Broken Equipment and Supplies; small weights, magnets, electrostatic cloth; calometric cups; small mirrors; resistors and other small electronic components. All small items used directly by students in the lab. They tend to wear out or get broken, and need to be replenished from time to time.

\$ 1,400 Total Physics request

2. How many students will benefit from this purchase?

Approximately *2000 students participate annually in labs using these materials*

3. How does this enhance your Equity Goals?

The primary equity goal is to provide all students an educational experience that enhances students' understanding of the theoretical concepts discussed in lecture. Hands on experiments provide an additional learning mode that widens the modes of instruction and provides learning opportunities for a wider range of students. It also connects more abstract theory to the real physical environment experienced by students. Physics laboratory courses satisfy GE lab science.

4. How does this enhance your Student Learning Outcomes?

All physics course SLO's include an objective related to the laboratory component of the class. To satisfy these SLO's students need to engage in experimental protocols that employ the requested materials and supplies.

5. Was this noted on your Program Review?

Yes.