2016 Annual Performance Report

Submitted: __

CAL POLY POMONA FOUNDATION INC
Grantee Name

3801 W TEMPLE AVE, POMONA, CA 91768
Grantee Address

P031M140025 110529
PR Award Number Unit (NCES) ID

Project Director Information:
Name Behnam Bahr
Title PPOHA Principal Investigator; Professor of Mechanical Engineering
Phone 909-869-2440
E-mail bbahr@cpp.edu

Title V - Promoting Postbaccalaureate Opportunities for Hispanic Americans
Department of Education Grant Program

Project MENTORES (Mentoring, Educating, Networking & Thematic Opportunities for Research in Engineering & Science)
Project Title

4-year Public Year 2
Type and Control of Institution Grant Year

Authorized Representative:
Name Behnam Bahr
Date 01/31/2017
Phone 909-869-2440
E-mail bbahr@cpp.edu
Section 1: Executive Summary

1a. The project has made contributions to the following areas - select all that apply:

- [X] Research
- [X] Knowledge
- [X] Practice
- [X] Policy

1b. The population served by this project is/was (check all that apply and indicate what percentage of the total project’s effort was directed at that population):

<table>
<thead>
<tr>
<th>Population served</th>
<th>% Total Project Effort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>65</td>
</tr>
<tr>
<td>Staff</td>
<td>5</td>
</tr>
<tr>
<td>Faculty</td>
<td>25</td>
</tr>
<tr>
<td>Administration</td>
<td>0</td>
</tr>
<tr>
<td>Other population from institution</td>
<td>5</td>
</tr>
<tr>
<td>Community members</td>
<td>0</td>
</tr>
<tr>
<td>Other Specify</td>
<td>0</td>
</tr>
</tbody>
</table>

1c. Summarize the impact your Title V PPOHA grant has had on your institution’s capacity to contribute to fulfilling the goals of the legislation, and some major highlights of the project goals.

Addressing Title V expansion of Postbaccalaureate opportunities for improving Hispanic student academic attainment, MENTORES increases institutional capacity to support STEM research. With 4% of masters and 3% of doctorate STEM degrees awarded to Hispanics—comprising the largest minority group with measured interest in STEM—we are well-positioned to affect change. Supervised by faculty mentors, fifteen graduate students received stipends, seven presented conference posters. To prepare students for research, workshops—offered by Maximizing Engineering Potential—provided database search strategies, APA style, research writing skills. Office of Graduate Consultant (Learning Resource Center) developed a graduate handbook. To broaden support, we worked with Career Center for a first annual STEM Industries Networking Social. 63.6% students identify as minority, 54.5% as Hispanic; with $16,000 median household income (below LA County residents, $53,889), a majority (81.8%) of students work. Our evaluation showed students ranking stipends as most beneficial. Addressing expansion of Postbaccalaureate academic offerings/program quality, student projects were developed for five courses, complimenting equipment serving more students via multiplier effect. Advisory board members (Cornell; MIT Lincoln Lab; Rensselaer Polytechnic Institute; Univ. of Michigan; UC: Berkeley, Irvine, Riverside) express interest in recruiting our students for PhD programs. Two students are in PhD programs—one at Cornell, the other at University of British Columbia—while a third is applying. Priming the PhD pipeline, Univ. of Michigan funded 13 students for a Postbaccalaureate visit. Our “Water” symposium had representatives from State Water Resources Control Board, USDA, and office of Congresswoman Grace Napolitano.

1d. Describe contributions the project has made to research, knowledge, practice and/or policy.

MENTORES has strengthened student-based research in STEM labs, supporting a broad interdisciplinary group of students and faculty collaborators; these include innovative studies on biofuel and feed production coupled with bioremediation of agricultural wastes and water reclamation. Graduate students participating in MENTORES come from Animal Sciences, Biological Sciences, Chemical & Materials Engineering, Chemistry, Civil Engineering, Geological Sciences, and Regenerative Studies. Students’ research was presented at the 2016 American Society of Engineering Education Pacific Southwest Conference, held at Cal Poly Pomona. The research included: 1) “Will Genetically Engineered Amphibian Skin Microbes Inhibit Growth of Batrachochytrium Dendrobatidis?”; 2) “The Interactive Effects of Nitrogen and Topography on the Distribution of Stipa Pulchra”; 3) “San Dimas Experimental Forest Watershed Modeling”; 4) “Imaging the Los Angeles Basin through Modeling of Seismic
Waveforms from a Temporary High-Density Deployment”; 5) “Incorporating the Engineering Component in Learning about Solar Energy Through Dye-Sensitized Solar Cells: Changing the Approach to Secondary Science Education”; 6) “Detection of Cyanobacteria and their Toxins for Safe Algae-based Feed Production”; 7) “From Degeneration to Regeneration? Inquiry into the Environmental, Social and Economic Viability of California’s Salad Bowl and Central Valley.” The most significant contribution of MENTORES was a comprehensive needs assessment that recognized where greatest improvements are needed; these included: timely admissions processing of graduate applications, matriculation and first-term orientation, identification of viable faculty mentor aligned to students’ expressed research interests, writing skills and thesis support, study space with 24-hour computer access, and financial support for part-time enrollment.

1e. Do your approved grant activities include construction?

Yes   No  X

Yes; I certify that this construction activity complies with executive order 13202.

Yes   No

2a. Choose the year of the most recent previous Title V PPOHA grant your institution has received:   2014

Has your institution experienced any substantial unexpected outcomes as a result of this grant?  YES

If your institution has experienced any unexpected outcomes as a result of this grant, that affect for better or worse its capacity to fulfill the goals of the legislation, describe the outcomes here.

An unanticipated outcome of one of our funded research projects involved deep interest from a community organization. The City of Pomona Homeless Outreach Program—whose goal it is to provide information resources and services to the homeless community—is now partnering with our faculty and students to optimize their classroom knowledge towards sustainability. Specifically, this organization aims to help low-income community members adopt water-saving strategies. This partnership creates opportunities for our students to work in low-income communities to support environmentally responsible behavior and help community members reduce water use by develop/adopting strategies for avoiding exacerbating polluted water resources.

Have you encountered any significant challenges during the past reporting period?  YES

Tell us about any challenges that you have had during the reporting period or that you anticipate in the coming year which may affect your ability to meet the goals of your grant. Include, if applicable, your institution’s plans to meet these challenges.

Funding for professional staff was not completely used due to unforeseen circumstances. The initial project evaluator was only able to provide assessment evaluation for the first year only. We received approval to hire a new evaluator for the MENTORES project. In addition, our projected received DE agency approval for funding an IT position based on overload; we believed utilizing existing staff would be more efficient. Our webmaster was able to develop a solid website, with over 95% ADA-compliancy score. However, due to multiple projects in our college, our webmaster was unable to continue supporting our project. We have since hired a student webmaster, who is working under the guidance of a technical staff, whose time is being compensating as % effort (not overload). Computer servers were encumbered immediately following the end of the reporting period. Most of the equipment was purchased during the reporting period, but the encumbrances did not post during this same reporting period.

Has the grant facilitated or contributed to bringing additional resources to your institution?  Yes

Source(s) of the additional resources being brought to your institution:

Other federal dollars
A group of faculty used the research equipment purchased by this grant to secure additional federal funding. For example, the US Department of Interior, Bureau of Reclamation’s US Department of Interior (DSDI) funded the research in the area of “Contaminants of Emerging Concerns in Potable Reuse Concentrate”, and the United State Department of Agriculture, and National Institutes of Food and Agriculture support research in “Algae for conversion of manure nutrients to animal feed: evaluation of advanced nutritional value, toxicity, and zoonotic pathogens”.

Local (county/municipality) dollars
A group of faculty used the research equipment purchased by this grant to secure additional local funding. For example, the Metropolitan Water District of Southern California funded research in the following areas:

- “Solar-powered Desalination and Purification System of Inland Brackish Water Using Reverse Osmosis”,
- “Solar Decentralized Graywater Treatment Unit”,

And finally, the City of Pomona Homeless Outreach Program has funded the “Aquaponics project which an environmentally friendly food production system that grows fish and plants together.

Other (please specify)  

In what general areas can you recognize opportunities for enhancement of the Title V PPOHA Program?

Allowable activities
Most faculty are identifying students in their senior year and want to recruit them as their graduate students. We recommend that the grant allow us to recruit Under-represented and low-income students in their senior year by providing them with a small stipend for their research activities and scholarly work. This would have a greater impact on the students and will help them to more easily transition from undergraduate to graduate program, and it may even reduce their time in the graduate program.
Section 2: Accreditation

Institution's primary accrediting agency.

___ Western Association of Schools and Colleges

Has the accreditation of your institution changed since you began the project? __No__
Section 3: Activities and Outcomes

Total Expenditures during the Reporting Period

Total federal dollars spent on your Title III/V grant: $384,004.31
Total federal dollars spent on Title III/V project management and evaluation: $18,000.00
Total remaining federal dollars spent on your Title III/V activities (Line 1 - Line 2): $366,004.31
Total number of activities: 3

Grant Activities and Outcomes

Grant activity:
Ion Chromatography system for electrolytic sample to perform cation measurements via electrolytically generated isocratic/gradient IC separations using conductivity detection; sample preparation capabilities extend range of instrument into on-line filtration, matrix elimination, neutralization, ultratrace analysis.

Total Spent: $82,063.92

Focus Area: Academic Quality

<table>
<thead>
<tr>
<th>Legislative Allowable Activities</th>
<th>Dollars Spent</th>
<th>% of Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase, rental, or lease of scientific or laboratory equipment for educational purposes, including instructional and research purposes.</td>
<td>$82,063.92</td>
<td>100</td>
</tr>
</tbody>
</table>

Process Measures

<table>
<thead>
<tr>
<th>Legislative Allowable Act</th>
<th>Dollars Spent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase, rental, or lease of scientific or laboratory equipment for educational purposes, including instructional and research purposes.</td>
<td>$82,063.92</td>
</tr>
</tbody>
</table>

Which of the following activities were carried out under this LAA activity? Check all that apply.

- Laboratory equipment for educational purposes
  - Purchase  X  Rent  ___  Lease
- Laboratory equipment for instructional purposes
  - Purchase  ___  Rent  ___  Lease
- Laboratory equipment for research purposes
  - X  Purchase  ___  Rent  ___  Lease

Please provide a short statement describing how your institution used funds in this area during the 2015-2016 academic year.

The fund was used to purchase an Ion Chromatography (IC) system to use by students to conduct research and analyze samples in one sequence.

Please describe the impact on student academic activities to date.

Number of students impacted  120

Please provide a brief supporting statement:
The Ion Chromatography system—used by students to analyze samples in one sequence without human interruption—showed increases in accuracy. This equipment was used to:

- Enhance the current high-quality education in environmental- and water-related courses with sophisticated equipment allowing measurement of concentration in ppm and ppb levels;
- Provide hands-on learning experience based on current industrial common practices;
- Enhance the Cal Poly Pomona “learn-by-doing” philosophy from undergraduate to graduate studies;
- Prepare students to respond to industry needs
- Contribute to workable and efficient solutions to the State-wide water crisis;
- Support workforce development initiatives in both the environmental and water industry;
- Develop and upgrade of laboratory facilities for enhancing Cal Poly Pomona’s research capability;
- Create novel and practical student projects to advance applied research opportunities (i.e., senior project courses, special project undergraduate classes, graduate-level reports and thesis topics).

The following graduate classes are directly affected by using the Ion Chromatograph as an analytical technique in terms of practical lab activities:

- CE 562: “Advanced Wastewater Treatment”
  (Principles of applied biotechnology used in various biological processes in wastewater treatment plant design. Advanced biological processes for BOD, nitrogen, and phosphorous removal, and membrane bioreactors will be considered in the design or improvement of wastewater treatment plants.)
- CE 569: “Solids and Hazardous Waste Management”
  (Principles of integrated solid waste management. Elements include waste generation, storage, collection, transfer, transport, processing, recovery, and disposal of municipal solid waste and industrial waste. Comprehensive design of landfills will be performed.)

The following undergraduate classes are affected by using the Ion Chromatograph as an analytical technique in terms of practical lab activities:

- CE 431/L: “Water Treatment Engineering” with Lab
  (Water pollutants and unit process treatment, water quality, water uses, aeration, sedimentation, coagulation, flocculation, filtration, disinfection, and saline water conversion.)
- CE 432/L: “Wastewater Treatment Engineering” with Lab
  (Wastewater characteristics and unit process. Subjects include characteristics of wastewater, sewer design, requirements for disposal, preliminary treatment, biological processes, and anaerobic digestion. Major wastewater treatment plant design project.)
- CE 351/L: “Environmental Engineering” with Lab
  (Identify multifaceted areas of environmental engineering by becoming familiar with different aspects of environmental engineering related to application of scientific/engineering principles to control the environment. Course covers: material balance, environmental chemistry, growth and decay, projection, risk assessment, water pollution, solid waste, hazardous waste, energy, noise pollution, and air pollution.)

Currently, four graduate students are enrolled in the Environmental and Water Resources Master’s program and using the Ion Chromatograph for their individual research projects. These students are:

1) Rommel Garcia, Graduate student, working on water reuse in California
2) Mojtaba Farrokh-Shad, Graduate student, working on water reuse in California
3) Hoda Shahrestani, Graduate student, working on water reuse and reclamation in California
4) Mankirat Singh, Graduate student, working on water/energy nexus in water systems in California
Grant activity:
Project MENTORES provided financial resources in the form of seven fellowship ($7,500 per student) and eight stipends ($3000 per student) to help students perform research in their respective STEM areas.

Total Spent: $82,604.05

Focus Area:  Student Services and Outcomes

<table>
<thead>
<tr>
<th>Legislative Allowable Activities</th>
<th>Dollars Spent</th>
<th>% of Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support for low-income postbaccalaureate students including outreach, academic support services,</td>
<td>$82,604.05</td>
<td>100</td>
</tr>
<tr>
<td>mentoring, scholarships, fellowships, and other financial assistance to permit the enrollment of</td>
<td></td>
<td></td>
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<tr>
<td>such students in postbaccalaureate certificate and postbaccalaureate degree granting programs.</td>
<td></td>
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</tbody>
</table>

Process Measures

<table>
<thead>
<tr>
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</thead>
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<tr>
<td>Support for low-income postbaccalaureate students including outreach, academic support services, mentoring,</td>
<td>$82,604.05</td>
</tr>
<tr>
<td>scholarships, fellowships, and other financial assistance to permit the enrollment of such students in</td>
<td></td>
</tr>
<tr>
<td>postbaccalaureate certificate and postbaccalaureate degree granting programs.</td>
<td></td>
</tr>
</tbody>
</table>

Which of the following activities were carried out under this LAA activity? Check all that apply.

- [ ] Outreach activities
- [X] Academic support services
- [ ] Mentoring
- [X] Scholarships
- [X] Fellowships
- [ ] Other financial assistance to permit the enrollment of such students in postbaccalaureate certificate and postbaccalaureate degree granting programs

Please provide a short statement describing how your institution used funds in this area during the 2015-2016 academic year.

Student Fellowships & Stipends:
Criteria for selection of MENTORES students selected for Fellowship & Stipend support: 1) Full-time graduate student; 2) Low-Income, Under-represented, minority, 3) Recommended by a faculty on the MENTORES Project (faculty provide mentoring, participate in MENTORES feedback sessions/surveys, must sign the informed consent form); 4) involvement with STEM, water or energy research; 5) Participation in MENTORES feedback sessions/surveys (student must sign informed consent form); 6) student participation at MENTORES Conferences, Poster Showcases, workshops and meetings.

Fifteen students were selected to receive fellowships and/or stipends based on meeting established criteria. Of the fifteen students, seven were awarded a Fellowship ($7,500), and eight awarded a stipend ($3,000) within the following STEM areas: Agriculture, Biology, Civil Engineering, Geology, and Regenerative Studies.

Please describe the impact on student attainment, student services and academic activities to date.

Number of students impacted  15

Please provide a brief supporting statement:
Both students and faculty participated in MENTORES/PPOHA grant information meetings, workshops, “Water” symposium, MENTORES/PPOHA grant project assessment and evaluation interviews and surveys.

The MENTORES/PPOHA Grant also purchased three computers for student use and one computer server, to be piloted for use and testing software in preparation for purchasing additional servers.
Grant activity:  
Supported faculty to develop three graduate level online/hybrid/flipped courses

Total Spent: $12,000.00

Focus Area:  Academic Quality

<table>
<thead>
<tr>
<th>Legislative Allowable Activities</th>
<th>Dollars Spent</th>
<th>% of Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support of faculty exchanges, faculty development, and faculty fellowships to assist in attaining advanced degrees in the field of instruction of the faculty.</td>
<td>$12,000.00</td>
<td>100</td>
</tr>
</tbody>
</table>

Process Measures

<table>
<thead>
<tr>
<th>Legislative Allowable Act</th>
<th>Dollars Spent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support of faculty exchanges, faculty development, faculty research, curriculum development, and academic instruction.</td>
<td>$12,000.00</td>
</tr>
</tbody>
</table>

Which of the following activities were carried out under this LAA activity? Check all that apply.

- [x] Faculty exchanges
- [ ] Faculty Development
- [x] Faculty Research
- [x] Curriculum Development
- [ ] Academic Instruction

Please provide a short statement describing how your institution used funds in this area during the 2015-2016 academic year.

The faculty members were given opportunity to develop graduate level courses. $4,000 was allocated for each course developed. Since the project focus was on water and energy, only three courses were approved. Some of the courses were developed with the team of faculty. Brief descriptions of these graduate courses are below:

1. CE 562: “Advanced Wastewater Treatment”: 4-unit class among one of four core courses for Environmental and Water Recourses emphasis in the Civil Engineering department. The shortage of drinking water is an upring challenge in the world; so it is essential to make use of all categories of wastewater and look at wastewater as a source for drinking water. This course covers principles of applied biotechnology used in various biological processes in wastewater treatment plant design. Advanced biological processes for BOD, nitrogen, and phosphorous removal, and membrane bioreactors will be considered in the design or improvement of wastewater treatment plants.

2. CE 599: “Environmental and Water Resource Engineering”: A survey of topics required for potential graduate students seeking Master’s in Civil Engineering with emphasis in environmental and water resource, who do not hold a BS in Civil Engineering degree. Topics include water distribution and collection systems, open Channel of Treatment process, dilution, kinetics and microbial physiology.

3. CHM 581, CHM 582, and CHM 583: “Analytical Special Topic Class to a Hybrid Water-Related Course”: These three courses, offered by the Chemistry and Biochemistry Department, discuss selected topics in modern analytical chemistry, such as mass spectrometry, electrochemical analysis, environmental analysis, separation analysis.

Please describe the impact on faculty development and academic activities to date.

Number of faculty impacted 6

Please provide a brief supporting statement:

The converted courses will emphasize the principle and applications of water. Some materials will be redesigned and lectured online in various formats, including but not limited to audio/video, quiz, discussion, and presentation.
The face-to-face portion of the courses will focus on student skill development, including instrument operation, presentation, and critical thinking. Upon completion of the courses, students will be able to apply basic concepts to water systems, understand the behavior and reactions of pollutants in water, and apply principles of chemistry to sample and remediate contaminated water.

Currently, there are three departments that are affected by these courses; and approximately 28 graduate students in the Department of Chemistry and Biochemistry are involved. In addition, it is helping the Environmental and Water Resource emphasis in the Civil Engineering department, as it is a newly established MSCE program, officially launched in Fall 2014.

More than half of the students hold a full- or part-time job while pursuing their graduate degrees. Hybrid courses provide students with more flexibility, with regard to course structure, to better facilitate a healthy work-life and school balance. Students can master the online material whenever time permits all the while still receive hands-on training in the classroom setting.
Grant activity:
MENTORES project organized a water symposium: “Water: California’s Gold,” which brought together water and energy experts from industry, government, research, academia, and alumni to discuss California’s future on the topic of water sustainability.

Total Spent: $5,475.00

Focus Area: Student Services and Outcomes

<table>
<thead>
<tr>
<th>Legislative Allowable Activities</th>
<th>Dollars Spent</th>
<th>% of Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Activity: Water Symposium</td>
<td>$5,475.00</td>
<td>100</td>
</tr>
</tbody>
</table>

Process Measures

<table>
<thead>
<tr>
<th>Legislative Allowable Activity</th>
<th>Dollars Spent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other activities proposed in the application submitted pursuant to section 514 that (A) contribute to carrying out the purposes of this part; and (B) are approved by the Secretary as part of the review and acceptance of such application.</td>
<td>$5,475.00</td>
</tr>
</tbody>
</table>

Please provide a list of ‘Other’ Activities if any:

Please be SPECIFIC and please provide a short statement describing how your institution used funds in this area during the 2015-2016 academic year.

The fund were used for covering the expenses associated with the water symposium 2016.

Please describe the impact on student academic activities to date.

Number of students impacted 51

Please provide a brief supporting statement:

Beyond educating students, the goal of the symposium also emphasized opportunities for students to present their research work in a poster format. This event provided a forum through which students met and connected with government and industry representatives, helping them to build their network. This served the purpose of MENTORES, which aims to increase minority students’ cultural capital. Brief bios of the speakers are listed below:

- Mary Ann Lutz: Government Liaison/Policy Advisor and Special Advisor to Congresswoman Grace Napolitano, California’s 32nd Congressional District. Lutz is prominently involved in water policy with an emphasis on storm water runoff, drought mitigations, groundwater management and water quality.

- Janice Waddell: Appointed to California State Director, USDA Rural Development, Waddell has more than 34 years of experience with Rural Development and its predecessor agencies, most recently serving as Assistant to the State Director. She served as Native American Coordinator where she instituted new outreach efforts to California’s Native American Tribes.

- Oscar Gonzalez: Elected to the Cucamonga Valley Water District Board of Directors, Gonzalez currently serves on the Engineering Committee and Legislative and Outreach Committee. He serves as a Director of the Fontana Union Water Company. He holds a B.S. Mechanical Engineering (CSULB) and a M.S. Environmental Engineering (Cal Poly Pomona).

- Richard W. Hansen: Hansen joined the Three Valleys Municipal Water District in 1977 and has served as the General Manager/Chief Engineer since 1981. He holds a B.S. Civil Engineering, M.S. Engineering (Cal Poly Pomona, and Master’s in Public Administration (CSU, Northridge).
• Maria Mehranian: Managing Partner and Chief Financial Officer for Cordoba Corporation, a full-service civil engineering, construction management, and program management firm specializing in transportation, education and facilities, and water and energy. Cordoba is headquartered in Los Angeles, with offices in San Francisco, Santa Ana, and San Diego, California. Maria has been serving on the Los Angeles Water Quality Control Board since 2008, having been appointed by Governor Brown for two consecutive terms.

• Boykin Witherspoon III: Boykin’s experience includes administration/management of Water Resources and Policy Initiatives and the Water Resources Institute. These include: strategic planning and budgeting; promotion with community, universities, and industry; liaison with advisory boards; program management; development and oversight of contracts and grants; hiring and supervision of staff; and training and publications efforts.

• Andrew Yeghnazar: As Founding Chairman of Water Technology Hub, an institute dedicated to engaging innovating thinking and the commercialization of new water technologies, Yeghnazar is currently the President of Blacoh Industries, a worldwide leader in industrial fluid control products. Blacoh Industries serves a variety of fields including water/wastewater treatment, energy, biotechnology, pharmaceutical, and food/beverage.
Grant activity:
One of the project MENTORES activities assisted all URM graduate students in facilitating a networking event, which connected students to industry representatives. Cal Poly Pomona’s Career Center collaborated with MENTORES to host a graduate career fair that incorporated a networking social event.

Total Spent: $2,500.00

Focus Area: Student Services and Outcomes

<table>
<thead>
<tr>
<th>Legislative Allowable Activities</th>
<th>Dollars Spent</th>
<th>% of Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Activity: Career service</td>
<td>$2,500.00</td>
<td>100</td>
</tr>
</tbody>
</table>

Process Measures

<table>
<thead>
<tr>
<th>Legislative Allowable Act</th>
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</table>
| Other activities proposed in the application submitted pursuant to section 514 that—  
(A) contribute to carrying out the purposes of this part; and  
(B) are approved by the Secretary as part of the review and acceptance of such application. | $2,500.00 |

Please provide a list of ‘Other’ Activities if any:

Please be SPECIFIC and please provide a short statement describing how your institution used funds in this area during the 2015-2016 academic year.

Funding was provided to the Career Center to organize the 2016 “STEM Industries Networking Social.” This event was held April 21, 2016. It was marketed to all graduate students at Cal Poly Pomona via marketing material and an online registration system. The event purpose: To provide opportunity to connect with students in a relaxed setting. Students from first-generation, low-income, and under-represented minority backgrounds were encouraged to attend. This event took place on the opening day of the 2016 American Society for Engineering Education Pacific Southwest Conference, allowing industry representatives a special opportunity to also interface with faculty from over 40 CSU, UC, and California Community Colleges, along with their graduate students.

Please describe the impact on student academic activities to date.

Number of students impacted 74

Please provide a brief supporting statement:

The MENTORES students were invited to the event, and the goal was to welcome both incoming and continuing graduate Students and provide them with opportunity to connect with over 30 STEM industry representatives in a relaxed setting. Further, prospective students were afforded opportunity to learn more about MENTORES.

Companies that participated in this event included: American Income Life; Bal Seal Engineering, Inc.; Exsilio Solutions; LEAP Career Development Forum; Lockheed Martin; Luxfer Gas Cylinders; Manson Construction Co.; Mercury Insurance; Mladen Buntich Construction; NNE Pharmaplan; Nordson; P2S Engineering, Inc.; RBC Transport Dynamics; Robert Half; Southern California Gas Company; Stantec; Tevora; Union Pacific Railroad.
Performance Measures - Programmatic

Please list any new courses, academic concentrations, or research initiatives your institution added as a result of this grant during the current academic year.
1. Course: Online Course: CE 562: Advanced Wastewater Treatment
2. Course: Online Course: CE 599: Environmental and Water Resource
3. Course: Online Course: CHM 582: Advances in Analytical Chemistry
4. Research Initiative: Research Initiative: Detection of Cyanobacteria and their Toxins for Safe Algae-based Feed Production, Joseph McHugh (Biological Sciences)
6. Research Initiative: Research Initiative: Imaging the Los Angeles Basin through Modeling of Seismic Waveforms from a Temporary High-Density Deployment, Michael Herrman (Geology)
8. Research Initiative: Research Initiative: San Dimas Experimental Forest Watershed Modeling, Kevin Hernandez (Civil Engineering)
9. Research Initiative: Research Initiative: The Interactive Effects of Nitrogen and Topography on the Distribution of Stipa Pulchra, Robert Fitch (Biological Sciences)
10. Research Initiative: Research Initiative: Will Genetically Engineered Amphibian Skin Microbes Inhibit Growth of Batrachochytrium dendrobatidis?, Marina De Leon (Biological Sciences)

Performance Measures - Students

<table>
<thead>
<tr>
<th>Performance Measures: Students</th>
<th>Number of Students at the beginning of the Year</th>
<th>Number of Students at the End of the Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of students participating in independent research, during the most recent complete academic year.</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>Number of students participating in research with faculty, during the most recent complete academic year.</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Number of students presenting at conferences, during the most recent complete academic year.</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Number of students writing for publication, during the most recent complete academic year.</td>
<td>1</td>
<td>8</td>
</tr>
</tbody>
</table>
Section 4: Project Status

Below is a list of objectives for each activity carried out over the current reporting period.

Activity: Ion Chromatography system for electrolytic sample to perform cation measurements via electrolytically generated isocratic/gradient IC separations using conductivity detection; sample preparation capabilities extend range of instrument into on-line filtration, matrix elimination, neutralization, ultratrace analysis.

On-Schedule Activity Objectives

#1: Increase the year-to-year admit yield of Hispanic low-income students in STEM graduate programs 5% over the previous year for each year of the five-year period.

#2: Increase the proportion of Hispanic low-income students who enroll in STEM graduate programs from 18% to 25% over the course of the five-year period.

#3: Increase the proportion of full-time graduate students at Cal Poly Pomona from 65% to 85% over the course of the five-year period.

Activity: Project MENTORES provided financial resources in the form of seven fellowship ($7,500 per student) and eight stipends ($3,000 per student) to help students perform research in their respective STEM areas.

On-Schedule Activity Objectives

#1: Increase the year-to-year admit yield of Hispanic low-income students in STEM graduate programs 5% over the previous year for each year of the five-year period.

#2: Increase the proportion of Hispanic low-income students who enroll in STEM graduate programs from 18% to 25% over the course of the five-year period.

#3: Increase the proportion of full-time graduate students at Cal Poly Pomona from 65% to 85% over the course of the five-year period.

Activity: Supported faculty to develop three graduate level online/hybrid/flipped courses.

On-Schedule Activity Objectives

#1: Increase the year-to-year admit yield of Hispanic low-income students in STEM graduate programs 5% over the previous year for each year of the five-year period.

#2: Increase the proportion of Hispanic low-income students who enroll in STEM graduate programs from 18% to 25% over the course of the five-year period.

#3: Increase the proportion of full-time graduate students at Cal Poly Pomona from 65% to 85% over the course of the five-year period.

Activity: MENTORES project organized a water symposium: “Water: California’s Gold,” which brought together water and energy experts from industry, government, research, academia, and alumni to discuss California’s future on the topic of water sustainability.

On-Schedule Activity Objectives

#1: Increase the year-to-year admit yield of Hispanic low-income students in STEM graduate programs 5% over the previous year for each year of the five-year period.

#2: Increase the proportion of Hispanic low-income students who enroll in STEM graduate programs from 18% to 25% over the course of the five-year period.

#3: Increase the proportion of full-time graduate students at Cal Poly Pomona from 65% to 85% over the course of the five-year period.

Activity: One of the project MENTORES activities assisted all URM graduate students in facilitating a networking event, which connected students to industry representatives. Cal Poly Pomona’s Career Center collaborated with MENTORES to host a graduate career fair that incorporated a networking social event.

On-Schedule Activity Objectives

#1: Increase the year-to-year admit yield of Hispanic low-income students in STEM graduate programs 5% over the previous year for each year of the five-year period.

#2: Increase the proportion of Hispanic low-income students who enroll in STEM graduate programs from 18% to 25% over the course of the five-year period.

#3: Increase the proportion of full-time graduate students at Cal Poly Pomona from 65% to 85% over the course of the five-year period.
Section 4: Budget Summary

<table>
<thead>
<tr>
<th>Category</th>
<th>Carryover Balance from Previous FY</th>
<th>Actual Budget</th>
<th>Carryover Balance from Previous FY+Actual Budget</th>
<th>Expenditures</th>
<th>Non-Federal Expenditures</th>
<th>Carryover Balance</th>
<th>% Carryover Balance into next year</th>
<th>Next Year's Actual Budget</th>
<th>Changes (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel</td>
<td>$135,190.81</td>
<td>$170,207.00</td>
<td>$305,397.81</td>
<td>$152,172.76</td>
<td>$0.00</td>
<td>$153,225.05</td>
<td>50.2%</td>
<td>$234,922.00</td>
<td>No</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>$31,993.94</td>
<td>$41,555.75</td>
<td>$73,549.69</td>
<td>$35,944.29</td>
<td>$0.00</td>
<td>$37,605.40</td>
<td>51.1%</td>
<td>$61,913.00</td>
<td>No</td>
</tr>
<tr>
<td>Travel</td>
<td>$3,301.59</td>
<td>$3,340.00</td>
<td>$6,641.59</td>
<td>$1,735.13</td>
<td>$0.00</td>
<td>$4,906.46</td>
<td>73.9%</td>
<td>$12,800.00</td>
<td>No</td>
</tr>
<tr>
<td>Equipment</td>
<td>$108,251.07</td>
<td>$117,402.00</td>
<td>$225,653.07</td>
<td>$82,063.92</td>
<td>$0.00</td>
<td>$143,589.15</td>
<td>63.6%</td>
<td>$34,500.00</td>
<td>No</td>
</tr>
<tr>
<td>Supplies</td>
<td>$5,109.29</td>
<td>$29,511.25</td>
<td>$34,620.54</td>
<td>$24,937.98</td>
<td>$0.00</td>
<td>$9,682.56</td>
<td>28.0%</td>
<td>$60,213.00</td>
<td>No</td>
</tr>
<tr>
<td>Contractual</td>
<td>$1,100.00</td>
<td>$4,600.00</td>
<td>$5,700.00</td>
<td>$394.00</td>
<td>$0.00</td>
<td>$5,306.00</td>
<td>93.1%</td>
<td>$4,100.00</td>
<td>No</td>
</tr>
<tr>
<td>Construction</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>0.0%</td>
<td>$0.00</td>
<td>No</td>
</tr>
<tr>
<td>Endowment</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>0.0%</td>
<td>$0.00</td>
<td>No</td>
</tr>
<tr>
<td>Scholarships</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>0.0%</td>
<td>$0.00</td>
<td>No</td>
</tr>
<tr>
<td>Student Stipends</td>
<td>$41,400.00</td>
<td>$106,300.00</td>
<td>$147,700.00</td>
<td>$82,604.05</td>
<td>$0.00</td>
<td>$65,095.95</td>
<td>44.1%</td>
<td>$105,500.00</td>
<td>No</td>
</tr>
<tr>
<td>Other</td>
<td>$15,013.76</td>
<td>$10,600.00</td>
<td>$25,613.76</td>
<td>$4,152.18</td>
<td>$0.00</td>
<td>$21,461.58</td>
<td>83.8%</td>
<td>$8,100.00</td>
<td>No</td>
</tr>
<tr>
<td>Total</td>
<td>$341,360.46</td>
<td>$483,516.00</td>
<td>$824,876.46</td>
<td>$384,004.31</td>
<td>$0.00</td>
<td>$440,872.15</td>
<td>53.4%</td>
<td>$522,048.00</td>
<td>No</td>
</tr>
</tbody>
</table>

Section 4: Budget Summary Narrative

Please explain budget changes, as needed, particularly the use of funds from cost savings, carryover funds and other expanded authorities changes to your budget. Provide an explanation if you are NOT expending funds at the expected rate. Describe any significant changes to your budget resulting from modifications of project activities.

1a. Have all funds that were to be drawn down during this respective performance period been drawn down? **No**

1b. If no, please provide a description of the funds (i.e. the amount) that have not been drawn down in the G5 system, and WHY they haven’t been drawn down.

Funding for student stipends was not completely spent due lackluster interest among students in carrying out research in the area of water and energy. This finding prompted project leaders to modify the project scope and broaden research topics to include STEM, in general. Funding for professional staff was not completely used. Initially, our project received DE agency approval for funding a position based on overload; we believed utilizing existing staff would be more efficient. Our webmaster was able to develop a solid website, with over 95% ADA-compliancy score. However, due to multiple projects in our college, our webmaster was unable to continue supporting our project. We have since hired a student webmaster, who is working under the guidance of a technical staff, whose time is being compensating as % effort (not overload). Computer servers were encumbered immediately following the end of the reporting period. Most of the equipment was purchased during the reporting period, but the encumbrances did not post during this same reporting period. The carry-over balance is $440,872.15. Explanations and budget category breakdown for use of the funds are included in section 3.b

2a. Have your project activities had to be modified? **No**

2b. If YES, please describe any significant changes to your budget resulting from modification of project activities.

3a. Did you have any unexpended funds at the end of the performance period? **Yes**

3b. If you did, explain why, provide the amount, and indicate how you plan to use the unexpended funds (carryover) in the next budget period.
The carry-over amount ($440,872.15) will be spent in the following areas: student support, online course development, faculty travel, research and instructional equipment, software, graduate student assistantships (for the University Library, Office of Graduate Studies, and Learning Resource Center), and MENTORES front office support.

1. $65,000: Stipend for students as was allocated in the original budget.
2. $40,000: Faculty support for development of online/hybrid and flipped graduate courses.
3. $55,000: For additional student assistants to enhance services for graduate students via various organizations and campus offices, such as the University Library, Learning Resource Center, Office of Graduate Studies, and Faculty Center for Professional Development and eLearning.
4. $135,000: Equipment for faculty and graduate students research efforts.
5. $50,000: Computer servers and computers to enhance computational needs for graduate student enter, research and education.
6. $30,000: Travel support for the PI/Co-PI and faculty/students to attend various STEM conferences. This is an incentive to encourage faculty to sign up as a mentors for graduate students.
7. $40,000: Supplies
8. $10,000: Software
9. $5,000: Contractual
10. $10,872: Other

4a. Do you anticipate any changes in your budget for the next performance period that will require prior approval from the Department (as designated by EDGAR, 34 CFR 74.25 and 80.30, as applicable). **No**

4b. Describe any anticipated changes in your budget for the next budget period (see EDGAR, 34 CFR 74.25 and 80.30, as applicable).

**Additional Information**

5a. Do you wish to make any changes in the grant’s activities for the next budget period? **No**

5b. If yes, describe any changes that you wish to make in the grant’s activities for the next budget period that are consistent with the scope, objectives, and/or personnel of your approved application. (*Further approval for these proposed changes may be required. Please contact your program officer.*)

6a. Were there any changes to key personnel during this reporting period? **Yes**

6b. If yes, did you receive approval from your Program Officer? **Yes**

7. Have you met your goals and objectives as outlined in your approved activities for this reporting period? **Yes**, No, or partially. **Yes**

    If no, please explain.

8. Provide any other appropriate information about the status of your project including any unanticipated outcomes or benefits from your project in the space below;

    An unanticipated outcome of one of our funded research projects involved deep interest from a community organization. The City of Pomona Homeless Outreach Program—whose goal it is to provide information resources and services to the homeless community—is now partnering with our faculty and students to optimize their classroom knowledge towards sustainability. Specifically, this organization aims to help low-income community members adopt water-saving strategies. This partnership creates opportunities for our students to work in low-income communities to support environmentally responsible behavior and help community members reduce water use by develop/adopting strategies for avoiding exacerbating polluted water resources.
Section 5: Technology

Grant activity carried out during this reporting period in your grant application:

*Creating or improving facilities for Internet or other distance learning academic instruction capabilities, including purchase or rental of telecommunications technology equipment or services.*

*No money was spent on this activity during the current reporting period.*
Section 6: Institutionalization

What are your institution’s plans to institutionalize or assume the costs incurred from the projects and activities created from this grant? The desire is for there to be continuity in the work begun by this grant and the work that is done in the future. Detail your plans to accomplish that goal.

1a. Complete the chart below detailing your plans to institutionalize the costs created by the activities of your project. In the three columns below, each activity name from the objectives is to be listed, then an approved line item (i.e. teacher salary), then actual financial cost.

<table>
<thead>
<tr>
<th>Activity Name</th>
<th>Approved line items*</th>
<th>Financial cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity 1- Ion Chromatography system for electrolytic sample to perform cation measurements via electrolytically generated isocratic/gradient IC separations using conductivity detection; sample preparation capabilities extend range of instrument into on-line filtration, matrix elimination, neutralization, ultratrace analysis.</td>
<td>The Cal Poly Pomona College of Engineering has agreed to maintain the cost of equipment and make it available for research and instructional use.</td>
<td>$82,063.92</td>
</tr>
<tr>
<td>Activity 2- MENTORES project organized a water symposium: “Water: California’s Gold,” which brought together water and energy experts from industry, government, research, academia, and alumni to discuss California’s future on the topic of water sustainability.</td>
<td>Cal Poly Pomona hosts many lecture series; but there are additional opportunities for increasing knowledge in the areas of water/energy and STEM.</td>
<td>$5,466.00</td>
</tr>
<tr>
<td>Activity 3- One of the project MENTORES activities assisted all URM graduate students in facilitating a networking event, which connected students to industry representatives. Cal Poly Pomona’s Career Center collaborated with MENTORES to host a graduate career fair that incorporated a networking social event.</td>
<td>Cal Poly Pomona’s Career Center will continue to support the graduate career fair and STEM Networking Social.</td>
<td>$2,500.00</td>
</tr>
<tr>
<td>Activity 4- Project MENTORES provided financial resources in the form of seven fellowship ($7,500 per student) and eight stipends ($3000 per student) to help students perform research in their respective STEM areas.</td>
<td></td>
<td>$82,604.05</td>
</tr>
</tbody>
</table>
### Institutionalization plan - Activity 4

<table>
<thead>
<tr>
<th>Activity 4</th>
<th>Cal Poly Pomona is considering providing Graduate Assistantships in the form of Research and Teaching Assistants.</th>
</tr>
</thead>
</table>

### Activity 5 - Supported faculty to develop three graduate level online/hybrid/flipped courses

<table>
<thead>
<tr>
<th>Activity 5</th>
<th>$12,000.00</th>
</tr>
</thead>
</table>

### Institutionalization plan - Activity 5

<table>
<thead>
<tr>
<th>Activity 5</th>
<th>Cal Poly Pomona has acquired a license for developing online courses under the QUALITY MATTERS and Professional Development Initiative.</th>
</tr>
</thead>
</table>

1b. In the space provided below please explain any notable experiences you have had in institutionalizing this project. Please list any considerable challenges, successes, or failures.

Of significant relevance to this project, Cal Poly Pomona has plans to hire a Director of the Graduate Education, and also to develop a one-stop-shop for all graduate students.