Proposal Title: General Equipment and Supplies for General Biology Courses

Originator and Position: Nick Reeves, Associate Professor and Chair, Biological Sciences

Area Dean: Michael Beckham, Interim Dean of Mathematics and Science

Campus: Menifee Valley Campus

Area Vice President: Brandon Moore, Interim Vice President of Instruction

Budget Account Code: Not sure – General fund?

*Total Amount Requested: $90,904

*Please complete all applicable portions of “Section VI - Projected Expense File” now to determine the “Total Amount Requested” above.

Please check:

| One-Time Funding: ☒ | On-Going Funding: ☐ | Safety: ☐ |

1.) For what are you asking?  2.) Why is the request timely and important?  3.) Where was the need identified? Please answer these three questions in 250 words or less. See instructions for further explanation.

We are asking for equipment and supplies to support several of our biology courses to enhance student success. This request includes micropipettes, centrifuges, vortexers, scales, water testing kit, skull models, biotechnology experiment kits, and human biology models. This is timely because we are adding courses and the equipment plus supplies needed are more than our current budget from the district. 2.) The needs were identified by the biology instructional aides. 3.) The need was identified in the biological sciences department.

**Section I – Program Review and Learning Outcomes - 20 points possible**

1.) Identify support from your 2014-15 Comprehensive Program Review (CPR) or 2015 – 16 Annual Program Assessment (APA) for this request (8 points). [Link to Program Review](#)

2.) How will this request help improve student learning in the course and/or program (12 points)?  

**Link to Learning Outcomes**

ILOs - Scientific Awareness: The student will possess an awareness of the physical and biological principles related to science. – The equipment being requested above supports the investigation of biological principles in the laboratory. - Biological Sciences DLOs - 1. Explain and appreciate how scientific knowledge is obtained and verified. - The equipment above will enable our department to offer a more relevant and up to date laboratory experience. Scientific knowledge is obtained using cutting edge technology that expands the limits of our senses and lets us observe and measure natural phenomena better. Scientific knowledge is verified through a rigorous scientific process that requires equipment and supplies to manipulate living systems. 2. Explore and appreciate the facts and principles concerning heredity, variation and diversity, the cell, evolution and natural selection. - To explore these fundamental concepts in biology students need a functional and safe laboratory space. The replacement/upgraded equipment and supplies described above will make it possible for us to provide a safe and fully functional laboratory experience. 3. Explain and appreciate the cycling of matter and the flow of energy in living systems. - To investigate this biological topic students need the appropriate equipment that will be funded by approval of this RAP. 4. Achieve basic literacy in the language of biology. - Basic literacy is gained through experiential learning. Students will be able to experience the concepts of biology and implement a rigorous scientific process in a safe environment using the equipment and supplies indicated above. - Additional Course Learning Outcomes specifically addressed by the items in this RAP proposal - BIOL-150 - General Biology I SLO 2: The student will be able to describe the energy transformations of glycolysis. - BIOL-151 - General Biology II - SLO 3: The student will relate the structures of animals to their functions. – BIOL-100 - CLO 1: The student will be able to identify major anatomical structures in the human model. - CLO 2: The student will be able to co-relate the major anatomical structure with its function in human body - BIOL-115 - Topics in Biology - SLO 2: The student will be able to identify the need for a control group and sufficient sample size in a scientific experiment. - BIOL-131 - Introduction to Biotechnology I - SLO 1: The student will demonstrate proficiency using micropipettes. - SLO 2: The student will relate the sequence of nucleotides in a DNA gene to the structure of the protein produced from this genetic information. - SLO 3: The student will consider the importance of recombinant DNA technology to the development of the biotechnology field. - BIOL-132 - Biotechnology II - SLO 1: The student will prepare and calculate formulas for different types of biological media. - SLO 2: The student will prepare and analyze buffers at different concentrations and pH levels. - SLO 3: The
student will plan and assemble bacterial cultures of various types for growth and maintenance.
- BIOL-133 - Biotechnology III - SLO 1: The student will experiment with purification of plasmid DNA from cells. - SLO 2: The student will identify the use of DNA probes in various techniques that are used in biotechnology. - SLO 3: The student will set-up cell lines

Section II – Alignment with Institutional Priorities via the Strategic Plan - 25 points possible

1.) How is your request aligned to the strategic goals below? Check all (typically 2 – 6 goals total) that apply. Click [here](#) for the 2016-17 Prioritization Allocation Rubric (PAR) for points-weighting during scoring.

2014-17 Strategic Plan Goals

| ☒ | 1. Reduce time to completion of student educational goals and increase degree, transfer and certificate completion. |
| ☒ | 2. Drive institutional decision-making using internal and external data to inform planning and prioritize resources. |
| ☐ | 3. Refine staffing plan and process |
| ☒ | 4. Improve fiscal responsibility that is sustainable for the long term |
| ☐ | 5. Identify sustainability strategies to improve efficiencies in processes district-wide |
| ☐ | 6. Expand and improve student involvement in campus life |
| ☒ | 7. Promote quality of institution through enhanced communication within the community (internal/external) |
| ☒ | 8. Enhance the overall campus life experience |
| ☒ | 9. In an effort to serve students build bridges between instructional services, student services and administrative services |
| ☒ | 10. Increase the College’s visibility, value and recognition in the service area |

2.) Please describe the connections between the goals you checked and your proposal (200 words maximum):

Goal 1: Objective 1.2 Increase face-to-face and online course completion and success rates leading to increase in transfers to four-year institutions – The equipment requested above supports student learning and provides a better learning environment that will lead to improved student retention and success. Subgoals addressed - Ensure all classrooms are smart rooms and update equipment regularly. Promote student success through focused and tactical advising, innovative learning strategies, and student education plan development. Update equipment will also drive institutional decision-making using data (Goal 2) since this technology will impact how department learning outcomes are taught and
assessed. The use of new equipment will help the college achieve a more fiscally sound position (Goal 4) because many of the biology experiments will be cheaper and faster to conduct in lab. The purchase of equipment will also promote enhanced communication within the community (Goal 7) since students will have opportunities to learn from each other within the classroom through a more collaborative, quantitative, and engaging experience. Equipment will also “enhance the overall campus life experience” (Goal 8) since they will meet the goal of “provid(ing) facilities that enhance student engagement” (Goal 8.1) “Improve the aesthetics of campuses to instill pride of ownership and creating a sense of place” Students enjoy and appreciate an active learning environment. Students are wowed by the use of modern technology in class and they understand the utility for their learning. (Goal 8.3) and will increase student awareness “of services and activities using…other technologies” (Goal 8.4). Equipment will “increase professional development” (Goal 9.1) opportunities and “think tank sessions” (Goal 9.3) through districtwide training opportunities for biology faculty. This technology will increase the College’s visibility, value, and recognition (Goal 10) since this will improve the reputation of the Menifee Valley Campus in the local community as a site that is at the forefront of technology and innovative teaching practices rather than a location of outdated equipment and classroom space.

Section III – Alignment with Institutional Plans - 15 points possible

Explain how your proposal is supported by the following plans: 2009-16 Educational Master Plan (4 points), Distance Education Plan (4 points), Technology Plan (4 points) and/or Facilities Master Plan (3 points). Link to Plans

This RAP is connected to the Educational Master Plan for 2009-2016, the Distance Education Plan, the Technology Plan, and the Facilities Master Plan of our college. The 2009-2016 Educational Master Plan on pages 202 to 203 states that “the biology program needs - FACILITIES - A new microbiology lab was added a few years ago, which also serves Biology and Marine Biology” The equipment being requested will update both labs to a more modern state. The equipment will also be used in additional labs that will be constructed through renovation projects and new building projects. Also on pages 202 to 203 “FUTURE PLANS - With increased demand, the (Biological Sciences) department plans to offer more sections of classes as facilities and personnel become available” as our department continues to have grow more equipment is needed as well. Additional lab space is planned for construction and all of the equipment will be utilized in the planned lab space as well. It is time to replace aging equipment and upgrade our equipment to more capable modern equipment. The Education Master Plan also states that “The college is considering a Biotechnology program in response to the influx of biotechnology firms into the surrounding communities.” This program is in existence and additional equipment and supplies are needed to support this program. Students enrolled in biotechnology classes will benefit, and students in other classes will also have experience with the equipment. This will give all our students a direct advantage when transferring or seeking employment,
both in biotechnology and other fields. Pages 294 and 295 of the Ed Master Plan states the need to keep up with the growing demands of laboratory-based courses. Our funding request will further that goal. 20 to 50 years old who are seeking retraining or upgrading, again due to the lack of job opportunities.”

With that in mind, the purchase of new equipment and supplies will provide students with an opportunity to develop twenty-first century skills that focus on collaborative learning and problem solving, technology usage, and content creation through technology. These skills will make our students more competitive candidates for the workplace and provide them with the “retraining” and “upgrading” described in the Educational Master Plan. The use of modern laboratory technology is also supported by the Technology Master Plan that describes the mission of the Information Technology Department as providing “an institutional computing environment that manages and maintains accurate, reliable, and efficient technology services for the success of the College community” (page 2). The administrative unit outcomes listed on the same page emphasize the need to support “a technology infrastructure that is conducive to student learning and College operations.” Administrative support for the purchase of modern biology equipment will be in keeping with the Technology Master Plan’s goal of creating a technology infrastructure that is conducive to student learning. Lastly, the Facilities Master Plan supports the purchase of usage of modern laboratory equipment since the goals of the Facilities Master Plan include creating “campuses that strongly support student learning and contribute to a high standard of student life” as well as creating “campuses and facilities that promote increased student-faculty interaction and interdisciplinary and collaborative learning.” Modern laboratory equipment helps achieve these goals by helping facilitate student learning and encouraging instructor-student interaction in the classroom through rigorous experimentation and data analysis.

Section IV – Goals and Measurable Outcomes – 30 points possible

1.) Describe your goal(s) for this project (10 points). How will this improve student learning or enhance institutional services? For a review of goals, see pp. 18 – 20 of a presentation via this link.

Goal One: Create a more equitable and active learning environment and utilize in-class technology. Goal Two: Improve student success rates through the use of laboratory technology that demonstrates concepts better. Goal Three: Decrease withdrawal rates through the use of technology that demonstrates concepts better and engages students in learning more effectively. Goal Four: Create a more dynamic and innovative classroom experience for students to foster twenty-first century learning skills. Goal Five: Improve technology that supports easier assessment of Course Learning Outcomes. Goal Six: Provide professional development opportunities for biology faculty to enrich their teaching repertoire

2.) What are the measurable outcomes for this RAP (10 points)? That is, how will progress toward meeting your goal(s) be identified and/or measured? Click here for learning outcome reference materials.
Measurable Outcome for Goal One: Purchase of new technology and equipment will improve the results of in-class lab activities and group projects. Measurable Outcome for Goal Two: Analyze institutional data of the success rates of history classes after implementation of new technology and equipment. Measurable Outcome for Goal Three: Analyze institutional data of the withdrawal rates of history classes after implementation of new technology and equipment. Measurable Outcome for Goal Four: Assess both the learning of the content as before but also the use of the technology and equipment. Measurable Outcome for Goal Five: Biology Department faculty will be trained on how to effectively incorporate equipment and technology into their laboratory exercises and develop more rigorous data analysis activities.

3.) Explain how your outcomes are tied to your CLOs/PLOs/AUOs/SLOs (10 points).

**ILOs - Scientific Awareness:** The student will possess an awareness of the physical and biological principles related to science. – **Goals 1, 4, 5** above; **Biological Sciences DLOs** - 1. Explain and appreciate how scientific knowledge is obtained and verified. – **Goals 1, 4, 5, 6** above 2. Explore and appreciate the facts and principles concerning heredity, variation and diversity, the cell, evolution and natural selection. – **Goals 1, 4, 5, 6** above 3. Explain and appreciate the cycling of matter and the flow of energy in living systems. – **Goals 1, 4, 5, 6** above 4. Achieve basic literacy in the language of biology. – **Goals 2 and 3** above; **Biological Sciences CLOs:** For many of the CLOs mentioned in 2.) the students will successfully develop biology laboratory skills and **Goals 1, 3, 4, and 5** above support those CLOs. For other CLOs mentioned in 2.) the students will gain an understanding of the scientific method and how it is used to develop new scientific knowledge and **Goals 1, 3, and 5** above support those CLOs. Lastly, for other CLOs mentioned in 2.) the students will develop discipline specific knowledge and **Goals 1, 2, 3, 4, and 5** support these CLOs.

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**Section V – Implementation Plan – 10 points possible**

What are the steps that you will take or need to be taken to implement this proposal?

1.) Who is in charge of implementing the project (2 points)? Nick Reeves and Jamie Marrs

2.) What are the projected start and end dates (2 points)? Spring 2016 to Fall 2016

3.) What other departments will need to assist to assist with the acquisition/implementation of the project (2 points)?

We may need some assistance from the facilities department

4.) When will the outcomes be measured (2 points)? Spring 2017 and Fall 2018
5.) How will you measure the desired outcomes (2 points)? Analysis of institutional data in our Annual Program Assessment, analysis of student learning outcome data in eLumen, Biological Science Department “think tank” sessions to share best practices

**Section VI - Projected Expense Profile**

For the object codes and titles below, please indicate the monetary amounts requested.

Object Code 4XXX
Supplies and Materials:  
Amount requested:  

Supplies and Materials:  
Amount requested:  

Supplies and Materials:  
Amount requested:  

Object Code 5XXX
Services:  
Amount requested:  

Services:  
Amount requested:  

Services:  
Amount requested:  

Object Code 6XXX
New Equipment/Building or Site Improvements:  
Amount requested:  

New Equipment/Building or Site Improvements:  
Amount requested:  

New Equipment/Building or Site Improvements:  
Amount requested:  

(S2) Subtotal from Non-Personnel Requests:  

Total Proposed Budget (sum subtotals (S1) and (S2) above):  

3. Secondary Effects (if this proposal is approved)

If a Classified/Administrative Personnel Prioritization Request is being submitted in tandem with this RAP, what additional space, if any, is needed to accommodate this position: 

For equipment and technology requests, will additional space be needed to accommodate the requested equipment? If so, where is the proposed location?
Will requested equipment require maintenance agreements or support personnel? If so, what the projected costs? Click here to enter text.

Please list future year anticipated needs and estimated financial needs. NOTE: This section refers to any anticipated funding not addressed by this RAP but required in the future. This will not be automatically funded. A new RAP must be completed in the future.

Fiscal Year: Click here to enter text. Anticipated need: Click here to enter text. Estimated amount: Click here to enter text.

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