Sciences Sciences Unit Plans

Budget: $291,000

1 Mission

Mission
The Palo Alto College Science Department
Biology:
The mission of the Biology program at Palo Alto College is to meet the needs of students for quality education in the area of Biology for transfer credit and for workforce education.
Chemistry:
The mission of the Chemistry program at Palo Alto College is to meet the needs of students for quality education in the area of Chemistry for transfer credit and for workforce education.
Geology:
The mission of the Geology program at Palo Alto College is to meet the needs of students for quality education in the area of Geology for transfer credit and for workforce education.
Physics:
The mission of the Physics program at Palo Alto College is to meet the needs of students for quality education in the area of Physics for transfer credit and for workforce education.

2 PAC Strategic Goal

BIOLOGY
PAC Strategic Goal
1) Empower students for success; Goal A) Increase student retention, success and completion rates.

3 Goal 1

The Biology Unit of the Science Department will increase its productive grade rate in all Biology courses from 76.4% (average from fall 2015 to spring 2016) to 77.4%, decrease its withdrawal rate in all Biology courses 1% from 13.5% (average from fall 2015 and spring 2016) to 12.5%, and increase its average enrollment in all Biology courses 1% from 1191 (average from fall 2015 and spring 2016) to 1203.

4 Action Step 1

1. By the end of spring 2017, the Biology Unit will request college funding toward materials and supplies listed on the 20172018 Biology Unit Plan Equipment List.
2. Using 4DX strategies in the 20172018 academic year, Biology faculty will contact at least three (3) at risk students each week.
3. In early September 2017, when the 20172018 budget has been established, the department will begin ordering the necessary supplies and materials.
4. Hire 1 full-time temporary faculty member to support the 129 Early College High School students to be enrolled in Biology 1406 and 1407 which represents an additional 5 sections above that offered in the Fall 2016 and Spring 2017 semesters.

5 Assessment 1

Assessment and evaluation of the stated goal will utilize analysis of the Palomino Performance Metrics data for the cycle being evaluated.

6 Dissemination 1

The department chairperson will communicate this information to the department faculty, Dean of Arts and Sciences, and the VPAA.

7 Budget Implication 1

Total funding for personnel and list of materials and supplies is $144,359.03 which includes the following:
1. One Full-time temporary faculty: $40,006.24

2. Funding for list of materials, supplies, and the microscope maintenance contract for Brazos Hall and Frio Hall Biology Labs from the PAC budget as found on the 2017-2018 Unit Planning Request List in order to support the Biology courses total $69,259.80. Those items include the following:
CX31 Olympus Binocular Microscope w/pointer (contract 490-M2) (12 x $1911.00 = $22,932.00)
Somso Muscle Man model (2 x $6800.00 = $13,600.00)
3B Scientific Circulatory (flat) system model (2 x $325.00 = $650.00)
Denoyer -Geppert Heart of the America model (2 x $445.00 = $890.00)
3B Scientific Digestive system flat model (2 x $499.00 = $898.00)
Wards Endocrine system model (2 x $525.00 = $1050.00)
Mammary gland model (2 x $335.00 = $670.00)
3B Nervous system flat model (2 x $425.00 = $850.00)
Somso Fertilization Process (flat uterus) model (2 x $1099.00 = $2198.00)
Denoyer Geppert Respiratory Organ and Heart model ($655.00)
Somso Larynx with Trachea model ($795.00)
Somso Cochlea sec (flat) model ($758.00)
Somso striated muscle fiber model ($747.00)
Somso Comprehensive Bone model ($775.00)
Somso Lung (Alveoli) Lung model ($1125.00)
3B Scientific Intro. Disarticulated skeleton (2 x $460.00 = $920.00)
Somso Dissectable Skull (color-coded) (2 x $799.00 = $1598.00)
Portable Dry spirometers (6 x $232.00 = $1392.00)
Germicidal lamps (2 x $262.25 = $524.50)
Self Tamping sensi-disc dispenser (6 x $665.95 = $3995.70)
Carolina Flow of Genetic Information Kit (24 x $119.00 = $2856.00)
Carolina Corn Segregating Ear, R and Su Alleles 9:3:3:1 (48 x $9.95 = $477.60)
Carolina Biokits Chromosome Simulation 10-Station (3 x $198.00 = $594.00)
Eisco Monocot Root Tip Model; l.s. ($319.00)
Somso Herbaceous Dicot Stem Model; c.s. ($980.00)
Somso Dicot Leaf Model; c.s. ($785.00)
Somso Dicot & Monocot Germinating Seed Model ($1155.00)
Somso Animal Brain Model Set (1-6) ($1150.00)
3B Ovary Relief Model; c.s. ($420.00)
Microscope maintenance contract for both Brazos and Frio Halls ($3500.00)

3. Increased operational budget for expendable glassware, chemicals, dissecting specimens, etc. to support the increased enrollment of 129 Early College High School students enrolled in Biology 1406 and 1407 is $12,743.66 as found on the 2017-2018 Unit Planning Request List.

4. Funding for list of materials and supplies and professional development from the current STEM Grant as found on the 2017-2018 Unit Planning Request List is $22,349.33 in order to support High Risk courses and an increase in enrollment due to additional ECHS students. These monies are divided into the following two requests:

In order to support the Biology 2401 High Risk Course Action Plan and address the PAC goal of Student Success and Retention, the Science Learning Center in Frio Hall will need to be furnished with items totaling $15,312.05 to be funded by the current STEM Grant. Those items include the following:
Somso Animal Mitosis Model Set ($805.00)
Somso Cochlea Section Model ($764.00)
Somso Central Nervous System Model ($1925.00)

3B Functional Shoulder Joint Model ($105.00)
3B Functional Elbow Joint Model ($105.00)
3B Functional Hip Joint Model ($105.00)
3B Functional Knee Joint Model ($105.00)
Eisco Color Coded Spine ($124.00)
Wards Muscle Type Model Set ($1235.95)
3B Scientific Skin Model ($129.00)
Motor Neuron Model ($830.00)
Somso Dissectable Skull (colored) (2 x $815.00 = $1630.00)
3B Scientific Median Section of the Head Model ($154.00)
Somso Neuron Model ($435.00)
Somso Larynx with Tongue Model ($545.00)
DNA Model Kit ($675.10)
3B Scientific ½ Size Muscular Figure $3710.00)
3B Ear Model ($204.00)
Somso Inner Ear Model ($650.00)
Somso Eye in Orbit Model ($920.00)
Altay Human Reflex Pathway Model ($156.00)

In order to support the increased enrollment of 129 additional ECHS students in Biology 1406 and Biology 1407 and address the PAC goal of Student Success and Retention, the labs in Brazos Hall will need to be furnished with items totaling $7037.28 to be funded by the current STEM Grant. The items listed below are being requested in order to offer concurrent lab sections on a daily basis utilizing the only two Biology lab rooms available in the Brazos Hall.
Esri ArcGIS ($1000.00)
Garmin eTrex 10 Handheld GPS (12 x $109.99 = $1319.88)
Automated microtome ($3500.00)
Carolina Hand microtomes (12 x $85.00 = $1020.00)
Carolina Porcelin mortars and pestles 320 ml (12 x $16.45 = $197.40)

8 PAC Strategic Goal

CHEMISTRY
PAC Strategic Goal
1) Empower students for success; Goal A) Increase student retention, success and completion rates.

9 Goal 2

Increase student Success Rates (PGR) in Chem 1405 and Chem 1411. Chem 1405 from 63.9 recorded Fall 2016 to 65% for the Spring 2018. Chem 1411 from 62.7 recorded Fall 2016 to 65% for the Spring 2018.

10 Action Step 2

1. Identify students needing math refresher training before the semester begins. Students will be asked to take quiz online of in the learning center prior to the first class day.
2. Set up workshops designed to remediate students in math. Chemistry instructors will work with Science Learning Center personnel.
3. Recommend that students not passing the quiz attend math refresher training.
4. Chem. 1405 and Chem 1411 faculty will identify students not passing the quiz, with or without attending refresher training.
5. These students without necessary math skills are notified that it is highly recommended they not register for the course or drop the course before census date if they are registered for the course unless the student commits to seeking regular tutoring in the Math Learning Center.
6. Hire 1 full-time temporary faculty member and 1 Academic Laboratory Technician to support the 83 Early College High School students to be enrolled in Chemistry 1411, 1412, 2323, 2123, 2325, and 2225 which represents an additional 5 sections above that offered in the Fall 2016 and Spring 2017 semesters.

11 Assessment 2

Assessment and evaluation of the stated goal will utilize analysis of the Palomino Performance Metrics data for the cycle being evaluated.

12 Dissemination 2

The department chairperson will communicate this information to the department faculty, Dean of Arts and Sciences, and the VPAA.

13 Budget Implication 2

Total funding for personnel and list of materials and supplies is $104,948.55 which includes the following:
1. One Full-time temporary faculty: $40,006.24

2. One Academic Laboratory Technician: $32, 667.00

3. Funding for list of materials, supplies, and the GC/MS instrument annual maintenance contract as found on the 2017-2018 Unit Planning Request List in order to support the Chemistry courses total $13,544.00. These item include the following:
Cole-Parmer Corrosives/Acid Safety Cabinet (2 x $2,870.00 = $5740.00)
Chemical Management Software ($796.00)
GC/MS Service Maintenance contract from Shimadzu ($7008.00)

4. Increased operational budget for expendable glassware, chemicals, to support the increased enrollment of 83 Early College High School students enrolled in Chemistry 1411, 1412, 2323, 2123, 2325, and 2225 is $16,122.96 as found on the 2017-2018 Unit Planning Request List.

5. Funding for list of materials and supplies and professional development from the current STEM Grant as found on the 2017-2018 Unit Planning Request List is $2608.35 in order to support the Chemistry 1411 High Risk course through the Science Learning Center. Those items include the following:
Flinn H atoms 1 hole (4 x $6.95 = $27.80)
Indigo O atoms 4 hole (30 x $0.67 = $20.10)
Flinn C atoms 4 hole (4 x $6.95 = $27.80)
eNasco mole box (3 x $9.50 = $28.50)
eNasco mole sets (4 x $23.35 = $93.40)
Educational Innovations fire syringe ($17.95)
Educational Innovations knob ($4.95)
Flinn TLC (4 x $20.10 = $80.40)
Flinn TLC jar and lid (3 x $6.95 = $20.85)
Flinn Polypropylene Beaker 5L ($48.00)
Educational Innovations Poly density kit ($19.95)
Educational Innovations steel sphere demo ($28.95)
Educational Innovations 51 bubl pro UV light (2 x $79.95 = $159.90)
Educational Innovations Eddy current tubes 18 ($39.95)
Educational Innovations Eddy current tubes 61 ($99.95)
Educational Innovations Diffusion mist ($17.95)
PASCO FLIR C2 Compact Thermal Imaging System ($499.00)
Flinn Instant light (2 x $12.25 = $24.50)
Flinn Energetic Light (2 x $24.75 = $49.50)
The Great Courses Chemistry 2nd edition ($374.95)
eNasco Calculators (10) (6 x $154.00 = $924.00)