INSTRUCTIONAL EQUIPMENT REQUEST
2017-2018

Internal Use
IE #: FALL-29
Total $: 10,120.58

Requester Name: Flores, Ansell, Grow, Wilkes **Division Name:** MSEPS

SECTION 1: SUMMARY INFORMATION

Brief Title of the Request:

Organic Chemistry Equipment

Equipment Location Building: 1800 **Room:** 1805

Location Comments:

This equipment will be stored in lockers and cabinets for student use in the Organic Chemistry Lab, 1805.

11/16/17 SM

SECTION 2: EQUIPMENT DESCRIPTION

The equipment is: ☐ **A Replacement** ☐ **An Upgrade** ☒ **New Equipment/Technology**

Describe the specific equipment requested and how it will be used to replace, upgrade or provide new technology to LPC from what is currently in place:

We are requesting funds to purchase standard organic chemistry glassware and equipment that will be used by students in the Chemistry 12A and 12B classes.

The Chemistry program was fortunate to have opened a third section of the 12A/12B series. All three sections of the 12A course this semester filled. This new set of glassware and equipment will be used by the students in the new section. We currently have a complete set for two sections and a partial set for the third section.

SECTION 2: EQUIPMENT DESCRIPTION (contd)

If applicable, describe the legal requirement, mandate, or safety concern for purchase of this equipment, making specific reference to the legal requirement or regulation:

Our course outline for 12A mandates a minimum of 16 laboratory techniques that students must learn. In 12B, students are expected to be proficient in these techniques to perform higher level analysis and synthesis. The glassware and equipment being requested here are the minimum set required to conduct these standard experiments to learn these techniques.

Specialized organic chemistry equipment are specifically designed to withstand pressurized systems, thermal shocks associated with high temperatures and sudden temperature changes, and frequent use. Some of these will also be used to replace broken glassware and faulty equipment that may have become unsafe to use. Many of these glassware and supplementary equipment are used in pressurized systems so cracked glassware and faulty connectors are important safety concerns.

SECTION 3: LPC MISSION STATEMENT AND LPC PLANNING PRIORITIES

LPC MISSION STATEMENT:

LPC is an inclusive learning-centered institution providing educational opportunities and support for completion of students' transfer, degree, basic skills, career-technical, and retraining goals.

LPC PLANNING PRIORITIES:

- **Accreditation: Establish regular and ongoing processes to implement best practices to meet ACCJC standards.**
- **Curriculum: Provide necessary institutional support for curriculum development and maintenance.**
- **Tutoring Services: Expand tutoring services to meet demand and support student success in Basic Skills, CTE, and Transfer courses.**
- **Professional Development: Coordinate available resources to address current and future professional development needs of faculty, classified professionals, and administrators in support of educational master plan goals.**

Specify how the equipment supports *LPC's Mission Statement* and *Planning Priorities*:

The equipment being requested supports both the mission of the College and the Program to provide educational opportunities and academically prepare students for transfer, degree completion, or a technical career. Many students taking Organic Chemistry are transfer students majoring in Biology, Chemistry, some Engineering fields, or pre-med/dental. This chemistry course series also fulfills degree requirements for both the AS-Chemistry and the AA-Chemistry Education degrees at LPC. Chemistry lab courses in Organic Chemistry are highly valued in entry-level jobs for environmental monitoring technician positions.

SECTION 4: EDUCATIONAL ITEMS – PROGRAM REVIEW

Specify the educational programs this equipment supports:

The equipment will have substantial impact on the Chemistry program curriculum for students because:

1) Many students taking Organic Chemistry are transfer students majoring in Biology, Chemistry, some Engineering fields, or pre-med/dental. The Organic Chemistry series (12A/12B) is required for all biology and chemistry majors and some engineering majors. This chemistry course series also fulfills degree requirements for both the AS-Chemistry and the AA-Chemistry Education degrees at LPC. The course outlines for 12A/12B which are used for course articulation and C-ID approval list a minimum of 16 laboratory techniques that students should learn how to do and be able to apply in these courses. The equipment being requested is required for these experiments. Having this equipment will ensure that students learn these techniques to fulfill the articulated learning objectives.
2) Completing the third set for the new section and replacing broken glassware and equipment will ensure that students receive a quality of training and lab skills acquisition required by transfer institutions. This will allow Organic Chemistry students to continue to hone their abilities to work independently and assume full responsibility for their equipment. These are minimum requirements for laboratory scientists.
3) The additional and replacement equipment will allow us to sustain three sections of Organic Chemistry. This has always been a high-demand course, especially now that more universities are accepting them for transfer. The demand for these courses will only increase when the TMC for chemistry is finally approved.

If this equipment is included in your Program Review, please include the exact wording. If equipment is not included, explain why:

Section One, PartB:
Supplies and equipment: More students in the program means more chemicals used, more glassware and other equipment needed, and higher frequency of use of instruments. With the 10% increase from last year in the number of sections offered and the addition of third sections of 12A and 12B, the Program has increased need for:
• Supplies budget to cover increase use of chemicals and glassware. In particular, the third section of the 12AB series requires special chemicals, locker equipment, and increased equipment maintenance and repair funding for instrumentation.

Section One, Part E:
Lack of funding for supplies and equipment
• We still lack funding to fully equip the third section of the Organic Chemistry.

Section One, Part F:
In 2017 – 2018, we plan to:...
• Request funding for Organic Chemistry additional locker equipment, kits, and glassware for the third section.

SECTION 5: TEACHING AND LEARNING

Describe in detail the impact this equipment will have on teaching:

We are requesting funding for standard laboratory equipment that fall under the definition: "'Instructional' shall mean equipment purchased for instructional activities involving....hands-on experience to enhance student learning and skills development."

Impact on teaching:
As mentioned above, our course outline mandates a minimum of 16 laboratory techniques that students need to learn in the laboratory. All the glassware and equipment being requested are the minimum necessary to teach students these techniques through various lab experiments. Faulty, missing, and insufficient glassware and equipment are an impediment to teaching because time is wasted on fixing, replacing, or substituting items or not running the experiment at all. Not having enough of and the right glassware will limit the types of teaching labs that students can do in the lab.

Describe in detail the impact this equipment will have on learning:

Impact on learning:
Chemistry is a hands-on subject. As stated above, the learning objectives stated in the course outline will not be met if there is not sufficient equipment to conduct the experiments to learn these techniques. Not having enough of and the right glassware will limit the types of labs that students can do in the lab. If students do not have the right equipment, they will be unable to prepare samples for analysis or synthesize molecules which affects their ability to use instrumentation such as the NMR, GC-MS, GC, polarimeter, melting point apparatus for meaningful analysis. Most if not all of these students are studying to become scientists and work in labs. Taking responsibility for the care and maintenance of their own equipment to ensure procedural safety and accuracy is an important skill that they learn in these labs. See also responses in the SLO section.

Each academic year, this equipment will impact: 6 **# of classes/sections** 132 **# of students**

SECTION 6: OUTCOMES (SLOs)

Using your documented SLOs, specify how the equipment will enable student learning outcomes to be achieved.

Chemistry is best learned and remembered by doing. The laboratory equipment being requested here will enable achievement of SLO's because our labs are designed for students to:
1) learn general experimental methods and techniques,
2) improve their analytical skills,
3) relate actual observations and experimental conclusions through the various activities that reinforce and enhance the learning of conceptual material.
4) work independently

Laboratory activities are directly tied to the Chem 12A/12B SLO's:

SLO outcomes for the 12A course require that students be able to predict products of an SN2 reaction. The learning of this concept is reinforced when they actually conduct and observe the reaction in the laboratory.

The SLO for the 12B is assessed using the American Chemical Society National Exam where students are asked various questions regarding laboratory techniques in synthesis, characterization, and analysis of compounds.

The equipment requested is the minimum required to fulfill these SLO's and those prescribed by the course outlines. It is also required for the program to fulfill its mission of supporting transfer students.

The 12A and 12B course SLO's also help students achieve the Program Learning Outcomes for both the AS-Chemistry and AA-Chemistry Education degrees as stated in the catalog: Students completing this degree should be able to demonstrate proficiency in solving complex problems in and conceptual understanding of Organic Chemistry as measured by the ACS Full-Year Organic Chemistry Exam.

What are the consequences related to learning outcomes if request is not funded?

The equipment requested is the minimum required to fulfill these SLO's and those prescribed by the course outlines. Without this equipment:

1) We will not be able to sustain offering three sections of Chemistry 12A and 12B which reduces access for this high demand course for transfer students. Not being able to take these courses has delayed by at least a year the transfer process for some students in the past.

2) The quality of learning may go down if students do not have the necessary equipment to focus on learning in the lab. Students will have to share equipment which will affect the number of experiments conducted and techniques learned. In many occasions, individual students work on the same organic compound sample over a period of weeks requiring individual equipment.

3) Organic Chemistry is where the ability to work independently is reinforced and further developed. It is therefore imperative that every student has his or her own set of glassware and equipment to use and assume responsibility for. Students need to learn how to take care of and maintain their own equipment for safety and accuracy of results.

SECTION 7: TOTAL COST OF OWNERSHIP (FINANCIAL & SUSTAINABILITY)

What is the potential life span of the requested equipment?

Many of the glassware and equipment, if used and maintained with care, can potentially last 5-10 years. Their long life span means that they don't need to be replaced often which saves resources. Students are instructed on how to take responsibility for the maintenance and care of equipment and glassware in their lockers after every use.

If new storage is needed what are the storage requirements, location requirements, and costs associated with the new equipment: (NOTE: Specific storage costs should be detailed in the "*Part A: Initial Start-up Costs*" section below.)

No new storage is needed because many of these will go inside student lockers or the cabinets and drawers in lab room 1805.

If this equipment replaces old equipment but the old equipment will not be retired, are there on-going storage requirements, location requirements, and costs associated with the old equipment? If so, provide details.

N/A. These are additional equipment.

What will be required to maintain the equipment, such as regular servicing or upkeep? (Specific on-going costs should be detailed in the "*Part B: On-Going Annual Operating Costs*" sections below as applicable.)

Students are instructed on how to take responsibility for the maintenance and care of equipment and glassware in their lockers after every use.

Explain how this equipment meets or exceeds basic sustainability efforts and/or provides renewable resources to the college:

Their long life span means that they don't need to be replaced often which saves resources. Many of the equipment and glassware being requested are required to run experiments at the microscale level reducing the amount of chemicals used and waste generated. This fulfills one of the 12 principles of green chemistry.

Part A: Initial Start-up Costs

Item	Cost	Comments
Equipment or Materials	$9,242.54	
Taxes (9.5%)	878.00	
Shipping or Delivery Charge		
Installation Costs *	0	
Miscellaneous Costs:	0	
Facilities Modifications		
Operator Training		
Maintenance & Repair Training		
Storage		
Other:		
Vendor Discount	0	
Grand Total:	$10120.58	

***For items requiring installation, requesters are required to check with District Purchasing (Victoria Lamica) regarding District policies.**

Part B: On-Going Annual Operating Costs

Item	Cost	Comments
Annual Service or Maintenance	0	
Estimated Parts Replacement Per Year	0	
Outside Standardization or Calibration Costs	0	
Storage Costs	0	
New Supply Costs	0	
Miscellaneous Costs:	0	
Maintenance & Repair Labor		
Other:		
Annual Operating Costs:	0	

Indicate the source of funding for on-going annual operating costs:

Part C: Incremental Labor Costs

OPERATOR:

Indicate the key operator: N/A

Is this in their current scope of duties? N/A

Indicate cost to train key operator (include in Initial Start-up Costs above): N/A

Indicate amount of time per month key operator will use equipment: N/A

MAINTENANCE & REPAIRS:

Indicate the person performing maintenance and repairs: N/A

Is this in their current scope of duties? N/A

Indicate cost to train for maintenance and repairs: N/A

Indicate amount of time per month maintenance will be required: N/A

APPROVALS

Funded requesters will be expected to respond to a brief RAC feedback survey by a requested deadline. Requests for computer-related equipment and printers must be reviewed by the LPC IT Department.

Signatures:

Requester	Date: NOV. 8, 2017
IT Department (if required)	Date
Dean/Manager	Date: 11-9-17
Vice President	Date

Chemistry 12 Organic Chemistry Equipment needed for new, third section							
Item	Part #	Price/unit	Unit amoun	Per class	Needed	Units to order	Price x Units to Order
Adapter, distilling	ACE 9562-11	$52.02	1	22	20	20	$1,040.40
Adapter, vacuum take-off	ACE 9564-10	$55.52	1	22	23	23	$1,276.96
Thermometer, alcohol-filled	Flinn AP1826	$12.90	1	22	27	20	$258.00
Vacuum tubing	VWR 62993-759	$187.10	50 ft	22	48	3	$561.30
Heat transfer block, small	ACE 9594-12	$18.20	1	22	20	20	$364.00
Heat transfer block, large	ACE 9594-16	$45.41	1	22	20	20	$908.20
Heat transfer block, small split	ACE 9594-08	$16.93	1	22	27	20	$338.60
NMR Tubes	VMR 13501-516	$59.91	5	22	24	5	$299.55
Thermometer, bimetal	Flinn AP1112	$19.75	1	22	24	20	$395.00
Adapter, hose	ACE 9069-04	$20.75	1	22	23	23	$477.25
Adapter, thermometer, straight	ACE 5028-25	$29.04	1	22	19	19	$551.76
Condenser, air reflux	ACE 9566-17	$33.21	1	22	20	20	$664.20
Crystallizing dish 80x40mm	VWR 89000-286	$116.16	6	22	6	1	$116.16
Funnel, Buchner	Sigma Z247308	$39.40	1	22	21	20	$788.00
Adapter (macroscale), vacuum take-off	VWR 89091-086	$601.58	6	22	12	2	$1,203.16
				Total Requested:			**$9,242.54**

RECEIVED
NOV 8 2017 #R

LAS POSITAS COLLEGE Equipment, Apparatus and Service Requisition

STEMPS Division # P
Las Positas College

FOR REIMBURSEMENT: List payee name & ssn. **TAX ID#** Phone: 1-800-223-4524

VENDOR: **ACE Glass, Incorporated ACCT# 88400621**
P.O. Box 688 Vineland, NJ 08361 FAX:800-543-6752

Track # 18-42

FOR OFFICE USE ONLY

STAFF MEMBER	DATE WRITTEN	DATE REQUIRED	DEPARTMENT		RETURN COPY of REQUISITION TO:
Gary Wilkes	**8-Nov-17**	**2-Jan-18**	Chemistry	**Room: 1812**	**Gary Wilks Linda Cross**

DESCRIPTION (PRODUCT, TYPE, SIZE, COLOR, STOCK NUMBER)	PRODUCT #	UNIT	QTY	UNIT PRICE	EXT PRICE
Adapter, distilling	ACE 9562-11	ea	20	$ 52.02	$ 1,040.40
Adapter, vacuum take-off	ACE 9564-10	ea	23	$ 55.52	$ 1,276.96
Heat transfer block, small	ACE 9594-12	ea	20	$ 18.20	$ 364.00
Heat transfer block, large	ACE 9594-16	ea	20	$ 54.41	$ 1,088.20
Heat transfer block, small split	ACE 9594-08	ea	20	$ 16.93	$ 338.60
Adapter, hose	ACE 9069-04	ea	23	$ 20.75	$ 477.25
Adapter, thermometer, straight	ACE 5028-25	ea	19	$ 29.04	$ 551.76
Condenser, air reflux	ACE 9566-17	ea	20	$ 33.21	$ 664.20
					$ -

Ship to: LPC-Chemistry 3000 Campus Hill Dr. Livermore, Ca 94551 Room 1856

Shipping (if available):

Subtotal			$ 5,801.37
Tax		9.25%	$ 536.63
		TOTAL COST	**$ 6,338.00**

Comments: **FY17/18**

Original invoices and receipts must be attached for payment. Include current taxes unless incorporated in price.

ACCOUNT #

FUND ORG ACCT PROGRAM

Nan Ho 11/9/17

Dean, STEMPS Date VP/ President

Business Office

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NOV 8 2017
STEMPS Division
Las Positas College

LAS POSITAS COLLEGE Equipment, Apparatus and Service Requisition

#R

P

FOR REIMBURSEMENT: List payee name & ssn. **TAX ID#** Phone: 1-800-452-1261

VENDOR **Flinn Scientific, Inc.** P.O. Box 219, Batavia, IL 60510-0219

Track # 18-43

FOR OFFICE USE ONLY

STAFF MEMBER	DATE WRITTEN	DATE REQUIRED	DEPARTMENT		RETURN COPY of REQUISITION TO:
Gary Wilkes	**7-Nov-17**	**2-Jan-18**	Chemistry	**Room: 1812**	**Gary Wilkes Linda Cross**

DESCRIPTION (PRODUCT, TYPE, SIZE, COLOR, STOCK NUMBER)	PRODUCT #	UNIT	QTY	UNIT PRICE	EXT PRICE
Thermometer, alcohol-filled	AP1826	ea	20	$ 11.61	$ 232.20
Thermometer, bimetal	AP1112	ea	20	$ 17.78	$ 355.60
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
Ship to: LPC-Chemistry 3000 Campus Hill Dr. Livermore Ca. 94551 Room 1856		Shipping (if available):			Free
		Subtotal			$ 587.80
		Tax		9.25%	$ 54.37
				TOTAL COST	**$ 642.17**

Comments: College receives free shipping and 10% discount on account under quote # 72973 which is still effective. **FY17/18**

Original invoices and receipts must be attached for payment. Include current taxes unless incorporated in price.

ACCOUNT #

FUND ORG ACCT PROGRAM

Business Office

Dean 11/9/17

Dean, STEMPS Date VP/ President

RECEIVED
NOV 8 2017

LAS POSITAS COLLEGE Equipment, Apparatus and Service Requisition #R

FOR REIMBURSEMENT: List payee name & ssn. TAX ID# Phone: 1-800-932-5000

STEMPS Division
Las Positas College

P

VENDOR: **VWR International Inc.** **ACCT# 80157177**
1310 Goshen Parkway, West Chester, PA 19380 Fax: (610)431-9174

Track # 18-44

FOR OFFICE USE ONLY

STAFF MEMBER	DATE WRITTEN	DATE REQUIRED	DEPARTMENT		RETURN COPY of REQUISITION TO:
Gary Wilkes	**8-Nov-17**	**2-Jan-18**	Chemistry	**Room: 1812**	**Gary Wilkes Linda Cross**

DESCRIPTION (PRODUCT, TYPE, SIZE, COLOR, STOCK NUMBER)	PRODUCT #	UNIT	QTY	UNIT PRICE	EXT PRICE
					$ -
Vacuum tubing	62993-759	Pkg	3	$ 187.10	$ 561.30
NMR Tubes	13501-516	pkg.	5	$ 43.14	$ 215.70
Crystallizing dish 80x40mm	89000-286	case	1	$ 108.42	$ 108.42
Adapter (macroscale), vacuum take-off	89091-086	case	2	$ 409.07	$ 818.14
					$ -
					$ -
					$ -
					$ -
					$ -

Ship to: LPC Chemistry 3000 Campus Hill Dr. Livermore Ca. 94551 Room 1856

Shipping (if available):

Comments:

Subtotal			$ 1,703.56
Tax		9.25%	$ 157.58
		TOTAL COST	**$ 1,861.14**

Original invoices and receipts must be attached for payment. Include current taxes unless incorporated in price.

ACCOUNT #

FUND ORG ACCT PROGRAM

Business Office

Dan Ho 11/5/17

Dean, STEMPS Date

VP/ President

NOV 8 2017

STEMPS Division
Las Positas College

LAS POSITAS COLLEGE Equipment, Apparatus and Service Requisition

#R

P

FOR REIMBURSEMENT: List payee name & ssn. **TAX ID#** Phone: 1-800-325-3010

VENDOR **SIGMA- ALDRICH CORP.** P.O. Box 14508 St. Louis, MO 63178 Fax: 800-325-5052

Track # 18-45

FOR OFFICE USE ONLY

STAFF MEMBER	DATE WRITTEN	DATE REQUIRED	DEPARTMENT		RETURN COPY of REQUISITION TO:
Gary Wilkes	**8-Nov-17**	**2-Jan-18**	Chemistry	**Room: 1812**	**Gary Wilkes Linda Cross**

DESCRIPTION (PRODUCT, TYPE, SIZE, COLOR, STOCK NUMBER)	PRODUCT #	UNIT	QTY	UNIT PRICE	EXT PRICE
Funnel, Buchner	Z247308	Ea	20	$ 39.40	$ 788.00
Ship to: LPC-Chem 3000 Campus Hill Dr. Livermore, Ca. 94551 Room 1856		Shipping (if available):			
		Subtotal			$ 788.00
		Tax		9.25%	$ 72.89
				TOTAL COST	**$ 860.89**

Comments: **FY17/18**

Original invoices and receipts must be attached for payment. Include current taxes unless incorporated in price.

ACCOUNT #

FUND ORG ACCT PROGRAM

Business Office

Dean, STEMPS Date

VP/ President