

INSTRUCTIONAL EQUIPMENT REQUEST

FALL 2019-2020

SEP 13 2019

Internal Use
IE #: Fall 19-29
Total \$: 3418.43

Requester Name: Rich Grow

STEMPS Division
Las Positas College

Division Name: STEM

SUMMARY INFORMATION

Title of Item: 60 microscale and 60 macroscale Fractional Columns

Equipment Location Building: 1800

Room: 1805

Location and Delivery Comments:

Deliver to 1806 and notify lab technicians.

SECTION 1: 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:

In order to separate liquids with similar boiling points in our Organic Chemistry classes, we are currently using water jacketed columns from our macro scale glassware kits. We have to leave the air in the jacket (no water) and have the students pack the column with copper wool to create "theoretical plates." The more theoretical plates that we have, the more carefully we can separate the two liquids. The problem is, this is not the way it's normally done in industry or academic labs. Normally, special glassware is used that has the extra surface area incorporated as part of the glassware. Our current method requires them to try to stuff expensive glassware with copper wool, do the experiment, and then remove and clean the glassware and copper wool. The glassware is often broken in the process and it's difficult to illustrate the concept this way. Also, the air-jacket we are using in our current glassware insulates the column so that it's difficult to heat it quickly as is required for this experiment. The experiment takes much longer and is more frustrating than it should be.

The upgraded columns do not have the jacket and will heat up more quickly and heat more evenly. The new upgrade actually has glass plates that the students can see. This will help us teach our students what the columns actually look like in professional labs without modifying them with copper wool. Having both microscale and macroscale columns will allow students to learn how it works on the smaller scale (3 - 5 ml) and on a larger scale (100 - 250 ml). The smaller scale reduces the waste, hazards, and the chemicals we buy each semester. We would have the ability to do either scale or both in order have the students see how effective the two methods are in comparison.

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ADMINISTRATIVE SERVICES

LAS POSITAS COLLEGE

SECTION 1: 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:

There are issues with packing the columns with steel wool and removing the steel wool when they are done. The newer macro-scale columns are safer and the micro-scale columns reduce the contact the students have with the organic solvents (from 100 ml to 5 ml) which is safer and cheaper.

SECTION 2: 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, for example.

SECTION 3: 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 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 without having to convert one column to another type of column with steel wool.

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 a 10% increase most years in the number of sections offered and a 10% cut in our supply budget, funding from the Bond is necessary.

SECTION 4: TEACHING AND LEARNING

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

Showing the students what the equipment should look like instead of one that has been adjusted to work, will allow us to teach the students what a theoretical plate is and what is actually going on in the glassware. The old equipment needs to be covered in tin foil to work and that makes it hard to observe what is happening. This will also allow us to compare and contrast the difference between the macro-scale and the micro-scale.

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

The upgraded glassware allows the students to actually see what is happening in a fractional distillation along with measuring their results. This gives the students a better understanding of what a theoretical plate is and how it works.

Each academic year, this equipment will impact: ⁶ # of classes/sections ²² # of students

SECTION 5: OUTCOMES (SLOs)

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

Chemistry is an experimental science. 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 and allow the students to compare and contrast different methods.

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

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.

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

We will continue to show the students how you can make one piece of equipment work as a different piece of glassware inexpensively.

SECTION 6: TOTAL COST OF OWNERSHIP (FINANCIAL & SUSTAINABILITY)

What is the potential life span of the requested equipment?

The glassware will probably last for 10 years with only small amounts of breakage. We would lose more of the old equipment during the conversion process of filling the columns with the steel wool.

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.)

New storage is not needed. They are small and we have space for them in our macro-scale kits and our micro-scale kits.

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.

The older columns will be used for regular distillations but not for the fractional distillations.

If your proposed equipment will require assembly or installation, please explain what is required, who will perform it, and what the cost will be

No assembly required.

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.)

The equipment will be cleaned and dried like the other glassware.

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

We will eliminate the casual breakage that occurs when students try to modify the equipment instead of using the correct glassware for the technique.

SECTION 6: TOTAL COST OF OWNERSHIP (contd)

Part A: Initial Start-up Costs

<u>Item</u>	<u>Cost</u>	<u>Comments</u>
Equipment or Materials	3,129.00	
Taxes (9.5%)	289.43	
Shipping or Delivery Charge	0	
Installation Costs *	0	
Miscellaneous Costs:		
Facilities Modifications	0	
Operator Training	0	
Maintenance & Repair Training	0	
Storage	0	
Other: _____	0	
Vendor Discount		
Grand Total:		\$ 3,418.43

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

Part B: On-Going Annual Operating Costs

<u>Item</u>	<u>Cost</u>	<u>Comments</u>
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:		
Maintenance & Repair Labor	0	
Other: _____		
Annual Operating Costs:		0

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

NA

SECTION 6: TOTAL COST OF OWNERSHIP (contd)

Part C: Incremental Labor Costs

OPERATOR:

Indicate the key operator: Rich Grow

Is this in their current scope of duties? yes

Indicate cost to train key operator (include in Initial Start-up Costs above): 0

Indicate amount of time per month key operator will use equipment: 10% of 1 or 2 months/year

MAINTENANCE & REPAIRS:

Indicate the person performing maintenance and repairs: Rich Grow

Is this in their current scope of duties? yes

Indicate cost to train for maintenance and repairs: 0


Indicate amount of time per month maintenance will be required: 0

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 and signed off by the LPC IT Department.
- ❖ Requests that require M&O assistance with assembly or installation must be signed off by M&O.

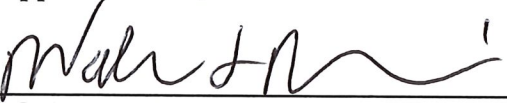
SIGNATURES:


Requester

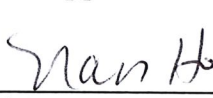
9/13/19
Date


IT Approval

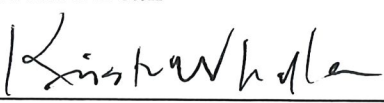
9/24/19 N/A
Date


M&O Approval

9/24/19 N/A
Date


Division Dean

9/19/19
Date


Vice President

9/20/17
Date

LAS POSITAS COLLEGE Equipment, Apparatus and Service Requisition

#R

FOR REIMBURSEMENT: List payee name & ssn. **TAX ID#** FOR OFFICE USE ONLY

NAME OF STAFF MEMBER	DATE WRITTEN	DATE REQUIRED	DIVISION/ DEPARTMENT	For inventory purposes include room # where	RETURN COPY of REQUISITION TO:
Richard Grow	12-Sep-19	ASAP	STEM/CHEM	1805	ch Grow ext 1341
DESCRIPTION	(PRODUCT, TYPE, SIZE, COLOR, STOCK NUMBER)	UNIT	QTY	UNIT PRICE	Air
1e Fractional Distillation column		each	60	\$ 28.02	\$ 1,681.20
2e Fractional Distillation coulmn		each	60	\$ 24.13	\$ 1,447.80
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p style="margin: 0;">RECEIVED</p> <p style="margin: 0; color: red;">SEP 20 2019</p> <p style="margin: 0; font-size: small;">VP ACADEMIC SERVICES LAS POSITAS COLLEGE</p> </div>					
Vendor Information/ Remit To:					
Fischer Science Education					
Deliver To, include room # (optional):					
Rich Grow, Room 1806					
Las Positas College					
3000 Campus Hill Drive					
Livermore, CA 94551					
Comments:					
					Subtotal
					Tax
					Shipping (if available):
					\$ 3,129.00
					\$ 289.43
					TOTAL COST \$ 3,418.43

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

ACCOUNT # _____ **FUND** _____ **ORG** _____ **ACCT** _____ **PROGRAM** _____

Business Office

APPROVALS

Jan 16 9/19/19
 Supervisor/ Coordinator/ Director

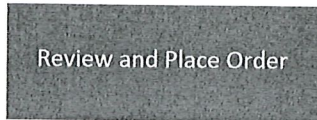
Jan 16 9/19/19
 Dean/ VP/ President

Sales Quotation

*Quote Nbr	Creation Date	Due Date	Page
9253-1145-41	09/10/2019		1 of 1
Payment Terms		Delivery Terms	
NET 30 DAYS		DEST	
Valid To		Prepared By	
01/08/2020		SINHA, SAM	
Customer Reference		Sales Representative	
091019		ROGER WEDIG	
To place an order	Ph: 800-955-1177	Fx: 800-955-0740	
Submitted To:		Customer Account: 948334-001	
RICHARD GROW RGROW@LASPOSITASCOLLEGE.EDU 925-424-1341		LAS POSITAS COLLEGE 3033 COLLIER CANYON RD LIVERMORE CA 94551-9797	



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Nbr	Qty	UN	Catalog Number	Description	Unit Price	Extended Price
1	60	EA	31 502 097	COLUMN DISTILLNG VIGREUX 14/10  Column, Distilling; Synthware; For Microscale applications; Vigreux style column w/indentations to improve vapor-liquid contact; Supplied w/one-holed Nylon cap, one Viton O-ring; 14/10 joint; 122mm L; 75mm indented section Vendor Catalog # C221410B This item is being sold as 1 per each	24.13	1,447.80
2	60	EA	31 500 716	COLUMN VIGREUX 19/22 130MM  Column, Vigreux Distilling; Synthware; With indentations for improved vapor-liquid contact; Column length measured from the highest to lowest indent; With top outer and lower inner standard taper joints; Indentation Length: 130mm; Upper joint: 19/22; Lower joint: 19/22 Vendor Catalog # C109130 This item is being sold as 1 per each	28.02	1,681.20

MERCHANDISE TOTAL	3,129.00
Estimated Sales Tax	289.43
TOTAL	3,418.43

NOTES:

We now offer highly competitive financing with low monthly payments. Please contact your local sales representative for more information.

Tell us about your recent customer service experience by completing a short survey. This should take no longer than three minutes. Enter the link into your browser and enter the passcode: USA-PGH-CS2

<http://survey.medallia.com/fishersci>