The University of Iowa | College of Liberal Arts and Sciences

Department: _____

Project Contact: _____   **Email**:_____

Proposal Title: _____

(2-5 words that summarize the content of your proposal. E.g., "Classroom Lab Refresh,"
"One Button Studios," "Learning Lab Equipment")

Budget Request:

Fiscal Year	Hardware	Software	Other	Salaries	Total
2024-2025	$_____	$_____	$_____	$_____	$_____
2025-2026	$_____	$_____	$_____	$_____	$_____
2026-2027	$_____	$_____	$_____	$_____	$_____
2027-2028	$_____	$_____	$_____	$_____	$_____
Totals:	$_____	$_____	$_____	$_____	$_____

Is this proposal a refresh or continuation of a previously-funded STF project?   **Yes**

Are you requesting that this proposal be considered for Early Spend? I.e., Do you <u>need</u> the funds before July 1st?

Making this request does not guarantee that your project will qualify for Early Spend.   **Yes**

Brief description of proposal:

[   ]

Submit proposals here: https://workflow.uiowa.edu/entry/new/13522

Updated: 12/05/2023

<h1 style="text-align: center"><u>Department of Chemistry Proposal for Student Technology Fees</u></h1>

Submitted By:

Dominic Frisbie, Administrator of Undergraduate Instruction

Due Date: February 1, 2024

<u>**Proposal Narrative**</u>

The purpose of this STF proposal is to revitalize and re-optimize existing undergraduate teaching and learning facilities in the Department of Chemistry.

The Department of Chemistry serves approximately 4000 students each semester, and the Chemistry Building houses over 1000 seats in auditoria, classrooms, and instructional laboratories, resulting in thousands of students using the facilities each day. Continual development of teaching at this large scale has resulted in a curriculum that relies on technology, not only to deliver content, but more importantly to provide tools for learning, measurement, analysis, visualization, communication, and collaborative engagement. Hands-on laboratory experiences are critical to student's learning process where well-designed experiments can develop/enhance problem-solving, critical-thinking, communication, as well as laboratory skills. These experiences help inspire students to further their educational or career goals.

To support our mission towards undergraduate education, the department is proposing to update critical technological infrastructure by updating and re-optimizing these laboratory facilities to regain utilization efficiencies and better meet the teaching and learning needs of the department and our students. The STF funding will be utilized to update 2-in-1 computers that are beneficial for the teaching of all courses; renewing software licenses used for chemistry instruction; addition of instruments provide experience for real-world application for students in multiple courses.

There are 3 components to this proposal:

1. Increase the total number of and refresh existing past-warranty 2-in-1 computers used by faculty for course instruction. There has been major growth in the way faculty in Chemistry utilize laptops and 2-in-1 computers. These computers have become a vital part of teaching. They provide the ability to actively show students the faculty thought process while teaching and engaging students from any area of the classroom. Up until now, we have had a limited number of these 2-in-1 laptops as they have shifted utilization with updates to courses. Originally purchased for use in CHEM 1110/1120 Case Studies, they have most recently been used by faculty in many courses to walk-through problems on the projector with the students. More and more faculty have requested the use of these 2-in-1 laptops for their courses, and we currently do not have the stock to distribute.
2. Purchase multi-year software licenses for advanced Chemistry courses. Multi-year licenses sometimes offer a discount. The software funding cycle has become out of phase with the hardware funding cycle. The software packages currently used by advanced Chemistry courses, ChemDraw Prime, Spartan, and Origin require updating to sustain use on the existing computer labs (including those that will be shifted). Advanced courses utilizing this software are reliant on continued use.
3. ~~Addition of new instruments in advanced undergraduate laboratory courses to keep up with much required technological advancement and software updates. This update will impact CHEM 3430, 3440, 3530, and 4450 Major Laboratory courses with yearly enrollment of about 75+~~

~~students/year on average. These instruments in advanced undergraduate laboratories will be used extensively for collecting and analyzing data. Instruments play a vital role in student learning because students gain hands on experience that cannot be replicated in a lecture during every laboratory experiment. This component of the proposal is critical because these instruments are used extensively for research and will help provide our students with the experience necessary to gain employment post-graduation.~~

CLAS IT will support maintenance and repair of those hardware and any replacement/upgrade plan will be submitted in future STF proposal.

Below is a list of courses supported by proposed changes and student enrollment numbers:

Course	2022 Enrollment	2023 Enrollment	Facility (Component Used)
CHEM:1070 General I	1682	1613	1
CHEM:1080 General II	435	474	1
CHEM:1110 Principles I	1589	1800	1
CHEM:1120 Principles II	1174	1303	1
CHEM:2021 Fundamentals	71	77	1,2
CHEM:2210 Organic I	826	874	1, 2
CHEM:2220 Organic II	502	515	1, 2
CHEM:2230 Organic I for Majors	48	60	1, 2
CHEM:2240 Organic II for Majors	37	41	1, 2
CHEM:2410 Organic Chemistry Lab	409	406	1
CHEM:2420 Majors Organic Chem Lab	44	48	1, 2
CHEM:3110 Analytical I	67	53	1, 2
CHEM:3120 Analytical II	53	63	1, 2
CHEM:3430 Analytical Measurements	16	25	1, 2, 3
CHEM:3440 Physical Measurements	18	24	1, 2, 3
CHEM:3530 Inorganic Chem Lab	20	22	1, 2, 3
CHEM:4430 Principles of Physical Chem	65	69	1, 2
CHEM:4431 Physical Chemistry I	60	52	1, 2
CHEM:4432 Physical Chemistry II	21	31	1, 2
CHEM:4450 Synthesis & Measurement	21	26	1, 2, 3
CHEM:4760 Radiochemistry	52	65	1
Potential Yearly Student Impact	**7210**	**7576**	**14786**
Total 5-year estimation	**36965**		

Department of Chemistry Proposal for Student Technology Fees

Budget:

Priority 1

Software Renewal*	Year 1	Year 2	Year 3	Year 4	Year 5	5-year Totals
Origin – 44 computer licenses start 12/2024 (1 yr subscription, renewable)	3264	3590.4 Possible Increase	3590.4	3590.4	3590.4	**17625.6**
Spartan – site license (5 year) Wavefunction Incorporated – start 7/24	9000	8000	8000	8000	8000	**41000**
ChemDraw Prime – site license (5 Year) Perkin Elmer Informatics Inc. – start 8/24	2000	2060	2121.8	2185.45	2251.01	**10618.26**
Total	**14264**	**13650.4**	**13712.2**	**13775.85**	**13841.41**	**69243.86**

Item	Quantity	Hardware Cost ($)	Software Cost ($)	Other Cost ($)	Labor Cost ($)	Priority
Computer Refresh*						
Dell Latitude 7440 2in1-i7	20	25880				2
Instrument Addition*						
~~Hitachi X-MET 8000 Optimum~~	~~1~~	~~24076.11~~				~~2~~
~~Raman ER-TEC X2-532~~	~~1~~	~~21245.00~~				~~3~~
TOTAL		25880				

*All hardware, warranty, and support included. Detailed quote attached with the proposal.

Budget Justification:

The proposed STF investment is directed towards student education and development by providing necessary resources required for a successful completion of lecture, discussion, and laboratory courses. Each year thousands of students take chemistry courses to fulfill their degree requirements and therefore, need to carry out course related activities that now demand creative and flexible use and availability of up-to-date technology. With constant updates in computer and instrument software, it is vital to keep up with updates so that the educational environment in classroom and laboratory settings remain unhindered. The Department of Chemistry strives for student success and the proposed STF funding is a necessary step towards reaching this goal.

Computer hardware selected for refresh include Dell 7440 SSF systems (Intel Core i7-1365U processor, 16 GB Ram and 3-year hardware service plan).

Department of Chemistry Proposal for Student Technology Fees

Installation and Management Plan:

The Department of Chemistry Instructional Staff collaborate extensively with CLAS IT personnel working within the department (Peter Franke, Bryan Ringen, and Michael Ciha) for any IT/computer related work. Computers, associated hardware and software will be purchased, installed, and maintained by our CLAS IT personnel. They work as a team supporting the department by actively participating in this STF funding request and have specifically reviewed this document. Any follow-up repair/maintenance will be handled through them as needed.