EPI Grant

Identifying Study Abroad Opportunities in the Sciences

Abstract

The College of Arts and Sciences (CAS) requests $16,083 from the Engaged Practices Innovation (EPI) Grant Program to research and promote study abroad opportunities for students in the sciences. By delineating courses and lab experiences overseas that fulfil major requirements, the project will encourage participation in study abroad on the part of CAS science majors—a group woefully under-represented in study abroad experiences.

Introduction and Background

Study abroad is a popular and important way of engaging undergraduates in diversity/global learning—learning which is defined by the American Association of Colleges and Universities as a core high-impact practice for undergraduates.[1] Specifically, study abroad has enormous influence on student success while also shaping long-term global engagement. Scholars have found, for instance, that the experience of study abroad significantly impacts both GPA and graduation rates. In terms of grades, in an ambitious ten-year effort (2000-2010) to assess study abroad experiences across the Georgia state university and college system, researchers found that students who studied abroad increased their mean cumulative GPA from 3.24 in credits taken before the international experience, to 3.3 in credits taken afterwards—this compared to a rise from 3.03 to 3.06 among students over the same period who did not study abroad.[2] At the same time, progress towards graduation improves with study abroad. Research tracking the first year class that entered the University of

[1] http://www.aacu.org/leap/hips
[2] http://glossari.uga.edu/datasets/pdfs/FINAL.pdf

Minnesota in 1999 found that four-year graduation rates were 15% higher among students who studied abroad as compared to those who did not, while five year graduation rates were 32.1% higher than the comparison group.[3]

The positive impact of study abroad does not lessen over time; if anything, it appears even more meaningful years later as alumni reflect on their undergraduate experiences. Between 2007 and 2010, scholars did a retrospective tracer study across 22 institutions of alumni who studied abroad between 1960 and 2007, exploring how overseas experiences impacted lives after college. Many of those interviewed and surveyed recalled the study abroad experience as not only the "most impactful aspect" of their undergraduate experience, but as overwhelmingly "among the most influential experiences in participants' lives"; these experiences often led participants into diverse and extensive global engagement suited to an increasingly globalized age.[4]

While the benefits of study abroad are shared across diverse student populations, participation is often very uneven, varying according to financial resources as well as undergraduate major. Nationally, in 2012/2013 more than 45% of US study abroad students were majoring in the humanities, arts, social sciences and languages; engineering majors, by contrast, represented only 4.1% of the total, while health profession majors represented 6.4%.[5] Within CAS at UVM, participation is even more dramatically differentiated by majors, with very few science majors studying abroad (see appendix A). For many in the sciences, where courses are tightly sequenced and highly specialized, study abroad seems like an unaffordable luxury; the choice appears to be between studying overseas and graduating on time. As a result, over the last four years, generally

[3] http://glossari.uga.edu/?page_id=42&did=14.
[4] R. Michael Paige and Gerald Fry, *Beyond Immediate Impact: Study Abroad for Global Engagement,* University of Minnesota, August 2010.
[5] http://www.iie.org/Research-and-Publications/Open-Doors/Data/US-Study-Abroad/Fields-of-Study/2003-14

less than 1% of majors in any of the science disciplines have studied abroad per semester. For instance, compared to other semesters, Spring 2015 was a banner term for participation: in that semester, however, only .9% of majors in Biological Sciences, 1% in Biology, .7% in Chemistry, 2.7% in Environmental Sciences, .7% in Geology, .8% in Neuroscience, and 2.2% of majors in Zoology studied abroad. In many terms not a single major in some disciplines studied abroad; throughout the *entire* four-year period, not a single physics major has *ever* studied abroad.

Given the benefits of study abroad to student success, global engagement, and more, the low participation rate of students in the sciences represents a lost opportunity—both for students to build broader understandings of global connectivity as well as for UVM to internationalize the campus. With this EPI project, CAS will build the infrastructure to connect science students to courses and lab opportunities overseas that directly contribute to their undergraduate majors. As such, we hope that this project will help expand participation in study abroad on the part of undergraduate CAS science majors, while ensuring timely progress towards graduation.

Project Description

With EPI funding, CAS project director Interim Associate Dean Abby McGowan will work throughout the fall 2016 semester with the Office of International Education (OIE) and science departments/programs to identify study abroad possibilities for majors and minors. (For the detailed work schedule for the project, see appendix B.) Specifically, with OIE guidance, faculty coordinators in each department/program (Biochemistry, Biology, Chemistry, Geology, Geography (Physical), Neuroscience, Physics and Psychological Science) will work with research assistants to find courses and lab opportunities at UVM's exchange universities overseas that could fulfill major or minor requirements. To maximize faculty involvement, coordinators will be given a modest stipend for their work; to maximize RA effectiveness, RA positions will be filled by graduate

students whenever possible. By December 2016, information on courses and labs will be made available both online and in printed handouts for use in advising; faculty coordinators will then monitor and update those materials in future years.

Specifically, the project involves the following personnel:

- *CAS project director:* Will serve as liaison with OIE, coordinate research efforts across the different departments/programs, train research assistants. *Approx. 42 hours.*
- *Department/program faculty coordinators:* Will direct research efforts within department/program, recruit and supervise RA, act as liaison with department/program faculty, coordinate efforts with program director. *Approx. 12 hours.*
- *Graduate or undergraduate research assistant:* Will conduct research on partner institutions, contact faculty at those institutions for syllabi and lab information, research appropriate courses and placements, prepare final data summary. *Approx. 65 hours.*

Impact of project

By the end of this project all eight science departments/programs within CAS will have identified five to seven partner institutions around the world where UVM students could study abroad while making progress on major or minor requirements. Even more specifically, CAS science majors will be able to see what courses at those partner institutions would translate into specific requirements at UVM, and will be able to explore possible lab placements overseas. With this information easily available online and offered in advising sessions, the hope is that participation rates in study abroad among CAS science majors will increase.

Assessment plan

Several types of assessment are planned, as follows:

- *Fall 2016 baseline survey:* An initial survey will be conducted of science majors to determine their knowledge of study abroad opportunities and how study abroad fits into their major.
- *Fall 2016 semester monitoring:* Throughout the fall, regular meetings and updates will gauge the quality and utility of research being done.
- *January 2017, utility assessment:* After project materials are made available to faculty, open discussions will be held with departments/programs to assess the utility of information, ideas for future research, and plans to share information with advisees.
- *May 2017, impact survey:* In May students will be surveyed again to see if their awareness of and interest in study abroad has changed given the new information made available.

EPI GRANT BUDGET REQUEST				
Identifying Study Abroad Opportunities in the Sciences				
Faculty Coordinators (12 hours at $30/hour)				
	Biochemistry	$360		
	Biology	$360		
	Chemistry	$360		
	Geology	$360		
	Geography (Physical)	$360		
	Neuroscience	$360		
	Physics	$360		
	Psychological Science	$360		
Graduate or Undergraduate Research Assistants*				
	Biochemistry-PhD RA	$1,766		
	Biology-PhD RA	$1,766		
	Chemistry-PhD RA	$1,766		
	Geology-MA RA	$1,506		
	Geography (Physical)-undergrad RA	$1,102		
	Neuroscience-PhD RA	$1,766		
	Physics-PhD RA	$1,766		
	Psychological Science-PHD RA	$1,766		
TOTAL REQUESTED		**$16,083**		
* Pay rates for RAs are as follows, with rank determined by presence,				
absence or level of graduate education in the discipline:				
	PhD student RA: 65 hours at $24.04/hr=1562.60+10.3% fringe= $1765.74			
	MA student RA: 65 hours at $20.51/hr=$1333.14+10.3% fringe=$1506.46			
	Undergrad RA: 65 hours at $15/hr=$975+10.3% fringe=$1101.75			
CAS COST SHARE				
Project coordinator: CAS Associate Dean: rate calculated at 8% of effort				
in the fall semester ($3,146) plus fringe ($1,357)				
	3 hours/week for 14 weeks	$4,504		
Communication efforts (represented as in-kind labor over the semester)				
	Website updates, redesign	$4,000		
	Design of handouts, materials for advisors	$500		
TOTAL IN-KIND CONTRIBUTION		**$9,004**		

Appendix A
Study Abroad Numbers by Major
Fall 2012-Spring 2014

	Total Majors 2012 Fall	Study Abroad 2012 Fall	Percentage of Majors in Study Abroad 2012 Fall	Total Majors 2013 Spr	Study Abroad 2013 Spr	Percentage of Majors in Study Abroad 2013 Spring	Total Majors 2013 Fall	Study Abroad 2013 Fall	Percentage of Majors in Study Abroad 2013 Fall	Total Majors 2014 Spr	Study Abroad 2014 Spr	Percentage of Majors in Study Abroad 2014 Spring
Biochemistry	215		0%	151	1	0.70%	202		0%	183		0%
Biological Sciences	255		0%	197	1	0.50%	259		0%	233		0%
Biology	439		0%	291	4	1.40%	421	1	0.20%	347	1	0.20%
Chemistry	197		0%	147		0	184		0%	184		0%
ENV Sciences	205		0%	145	1	0.70%	177	2	1%	158	2	1.30%
Geology	158		0%	111		0	140	1	0.70%	147	1	0.60%
Neuroscience	263	2	0.70%	204		0	280	1	0.30%	264	2	0.80%
Physics	160		0%	103		0	135		0%	139		0%
Zoology	179	1	0.60%	133	2	1.50%	172	1	0.60%	165		0%
										1820		
		Total CAS Study Abroad			Total CAS Study Abroad			Total CAS Study Abroad			Total CAS Study Abroad	
		128			181			127			148	

NOTE: Study abroad numbers are not offered for Psychological Science and Geography as both majors have substantial social science components, making it difficult to tease out the numbers of majors with a physical science focus.

Appendix A
Study Abroad Numbers by Major
Fall 2014-Spring 2016

s			Percentage			Percentage			Percentage			Percentage
	Total Majors 2014 Fall	Study Abroad 2014 Fall	of Majors in Study Abroad 2014 Fall	Total Majors 2015 Spr	Study Abroad 2015 Spr	of Majors in Study Abroad 2015 Spring	Total Majors 2015 Fall	Study Abroad 2015 Fall	of Majors in Study Abroad 2015 Fall	Total Majors 2016 Spr	Study Abroad 2016 Spr	of Majors in Study Abroad 2016 Spring
Biochemistry	211		0%	173		0%	204	1	0.40%	223	1	0.40%
Biological Sciences	264	2	0.80%	220	2	0.90%	280		0%	287	4	1.40%
Biology	403	1	0.30%	310	3	1%	406	1	0.20%	389	3	0.80%
Chemistry	178		0%	145	1	0.70%	166		0%	186		0%
ENV Sciences	175	1	0.60%	147	4	2.70%	198	2	1%	213	2	0.90%
Geology	158		0%	134	1	0.70%	156		0%	174	1	0.60%
Neuroscience	315	3	1%	254	2	0.80%	326	1	0.30%	338	3	0.90%
Physics	141		0%	124		0%	149		0%	171		0%
Zoology	161		0%	136	3	2.20%	169		0%	190		0%
		Total CAS Study Abroad			Total CAS Study Abroad			Total CAS Study Abroad			Total CAS Study Abroad	
		118			141			86			195	

Appendix B: Project Work Schedule

Date	Coordinating Group Meetings	Faculty Responsibilities	RA Responsibilities
Aug 29-Sept 2	Initial meeting to review goals, expectations *(approx. 1 hr)*	1. Initial meeting to review goals, expectations *(approx. 1 hr)* 2. Faculty advisors bring list of select list of existing exchange institutions prepared by OIE to department faculty meetings for initial review; goal is to select 10 institutions where there are existing relationships (as a department or on the part of individual faculty), or that are known for their strengths in the field *(approx. 1 hr)*	Initial meeting to review goals, expectations *(approx. 1 hr)*
Sept 6-9			RA trainings to review existing OIE materials, explore exchange agreements, research programs and curricula *(approx. 2 hrs)*
Sept 12-16		RAs and faculty advisors meet to discuss list of universities selected by the departments, determine criteria to be used to evaluate those universities in terms of suitability for study abroad experiences for majors *(approx. 2 hrs)*	RAs and faculty advisors meet to discuss list of universities selected by the departments, determine criteria to be used to evaluate those universities in terms of suitability for study abroad experiences for majors *(approx. 2 hrs)*
Sept 19-23			RAs start researching initial list of universities selected by the departments *(approx. 6 hrs)*
Sept 26-30			RAs continue researching list of universities selected by the departments *(approx. 6 hrs)*
Oct 3-7			RAs continue researching list of universities selected by the departments *(approx. 6 hrs)*
Oct 11-14		RAs and faculty advisors meet to review initial research, identify 5-7 universities to investigate further, determine criteria to be used to identify labs and course which would be appropriate for majors *(approx. 2 hrs)*	RAs and faculty advisors meet to review initial research, identify 5-7 universities to investigate further, determine criteria to be used to identify labs and course which would be appropriate for majors *(approx. 2 hrs)*

Oct 17-21	Faculty coordinator meeting *(approx. 1 hr)*	Faculty coordinator meeting *(approx. 1 hr)*	RAs contact faculty and/or department chair at 5-7 universities to get details of course curricula, lab and research opportunities, collaboration options *(approx. 5 hrs)*
Oct 24-28			RAs contact faculty and/or department chair at 5-7 universities to get details of course curricula, lab and research opportunities, collaboration options *(approx. 5 hrs)*
Oct 31-Nov 4		RAs and faculty meet to review progress *(approx. 1 hr)*	1. RAs and faculty meet to review progress *(approx. 1 hr)* 2. RAs conduct initial review of curricula, lab profiles to identify suitable courses and lab opportunities for majors *(approx. 9 hrs)*
Nov 7-11			RAs conduct initial review of curricula, lab profiles to identify suitable courses and lab opportunities for majors *(approx. 10 hrs)*
Nov 14-18		RAs and faculty advisors meet to review courses, lab opportunities *(approx. 1 hr)*	1. RAs and faculty advisors meet to review courses, lab opportunities *(approx. 1 hr)* 2. RAs summarizes materials on courses, labs for final faculty review *(approx. 9 hrs)*
Nov 28-Dec 2		Faculty advisor finalizes list of courses and lab opportunities *(approx. 2 hrs)*	
Dec 5-9	Faculty coordinator meeting *(approx. 1 hr)*	Faculty coordinator meeting *(approx. 1 hr)*	
TOTAL HOURS		**12 hours**	**65 hours**

The University of Vermont

Brian Reed, Associate Provost for Teaching and Learning
EPI Grant Review Committee

April 15, 2016

Dear committee members,

This letter is to express my enthusiastic support for the proposal "Identifying Study Abroad Opportunities in the Sciences" submitted by Interim Associate Dean Abby McGowan. The College of Arts and Science is actively exploring a range of different ways to expand participation in study abroad opportunities, integrate study abroad experiences into on-campus learning, and engage faculty in preparing students for international experiences. This grant represents an essential component of that larger project, bringing the advantages of opportunities of study abroad to students in the sciences. Prof. McGowan has built up broad support for the project among science department chairs and program directors who are enthusiastic about participating in this initiative. Faculty in the sciences have long wanted to have their students more involved in study abroad; it has always been impossible to move forward, though, given the lack of time and resources to research what programs make the most sense for their students. This project will provide just that time and resources, building stronger links to international programs—links which faculty can build on over time to create even stronger ties.

I very much hope you will support this proposal. Please contact me if you have any questions.

Sincerely,

William Falls
Dean, College of Arts and Sciences

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The University of Vermont

Office of International Education

To: Brian Reed, Associate Provost for Teaching and Learning;
EPI Grant Review Committee Members

From: Kim Howard, Director, Office of International Education

Date: April 15, 2016

RE: Support of College of Arts & Sciences proposal – Science majors abroad

I am excited to offer the support of the Office of International Education to the College of Arts & Sciences' (CAS) proposal to increase the participation of science majors abroad.

Historically, the number of CAS science majors who have studied abroad for a semester has been abysmal, especially compared with their humanities and social sciences peers. The two most significant barrier to students studying abroad in STEM disciplines is 1) the lack of identification of course offerings abroad which match the home curriculum, and 2) a culture among faculty and student peers that "STEM students just can't study abroad" (which is fueled by number one).

The CAS project will address both of these barriers. A number of our exchange partners offer courses in English in the academic disciplines CAS is seeking to target. But the identification of the proper curricular matches takes an enormous investment of time in getting course syllabi and then having qualified faculty analyze that syllabi. As much as study abroad advisors might want to help in such an endeavor, we are not qualified to do so. Additionally, by basing the project within the faculty of each discipline, the culture of belief of what is possible abroad for science students will change.

Our office is prepared to provide baseline materials for the project (which current/prospective partners offer which disciplines) as well as to facilitate the political connections abroad necessary to connect the academic units for gathering of syllabi. Additionally, we are prepared to do baseline research (housing availability, security, ECTS transfer credit considerations) of any new partners a given department would like to consider pursuing.

Finally, I hope the committee will see the long-term sustainability of what CAS is proposing. This is a one-time-needed investment which will pay dividends for many academic years to come.

Living/Learning B101
Telephone (802) 656-4296, www.uvm.edu/oie