FY 2015 Awards

Author(s)	Gunes Ercal, Darron Luesse
Title	Towards an Interdisciplinary Bioinformatics Curriculum
Award	$16799
Abstract	There is an ever-increasing demand for expertise in bioinformatics, an interdisciplinary field crossing biology and computer science that deals with computational methods for efficient storage and analysis of biological data. The number of universities incorporating bioinformatics at various levels into their undergraduate biology or computer science curricula is growing. From the computer science perspective, bioinformatics presents an excellent domain in which to apply algorithmic knowledge, requiring a deep algorithmic understanding to truly tackle the scale of the problems involved. More importantly, the interdisciplinary nature of bioinformatics lends itself to thinking broadly and fundamentally as a scientist rather than as a biologist or a computer scientist in particular. The relevance of the field is amplified in the greater St. Louis region, where major biological research facilities are present. Both Biology and Computer Science departments have an expressed long-term interest in jointly incorporating Bioinformatics into their undergraduate curricula by way of a specialization. An appropriately synchronized two-course offering from Biology and Computer Science, respectively, is an important first step in this regard, by establishing a real rapport between both students and faculty of both departments. One hoped-for long-term byproduct of a bioinformatics curriculum involving such cross-disciplinary course-pairings supported by studies is an increase in female recruitment and retention in Computer Science. EUE funding is requested to support the collaborative development of two interdisciplinary bioinformatics courses to be offered in Spring 2015 and numbered as CS 490 Topics in Computer Science and BIOL 490 Topics in Biology. While each will be taught at the appropriate level for senior/graduate students in their respective disciplines, the execution of the courses will feature lectures from both faculty and interdisciplinary group work on synchronized projects with students from both courses. In addition, funds are requested to support experiential learning in the form of two field trips to biological research facilities in St. Louis. This proposal is well aligned with EUE goals due to the innovative project-based paired-course pedagogical model applicable to interdisciplinary technical subjects in addition to the emphases on female recruitment into Computer Science and experiential learning via projects and field trips.

Author(s)	Jenna Gorlewicz, Sharon Locke. Gunes Ercal, Sean Herberts, Georgia Bracey
Title	Experiential Learning in Engineering Communication
Award	$13955
Abstract	The need for communication skills for engineers is essential in the competitive, highly interdisciplinary, and global nature of the engineering job market, yet communication has consistently been noted as one of the top

three areas lacking in engineering education. Currently, the SIUE undergraduate engineering curriculum does not offer any explicit instruction on effective technical communication. We propose to address this gap by creating, piloting, and evaluating an innovative 2-semester Experiential Learning in Engineering Communication program that will provide ten engineering students with research-based strategies for communication and presentation skills applied at the high school, college, and professional level. This program will consist of three essential components focusing on technical content exploration, effective lecturing skills, and facilitating interactive and engaging learning. These skillsets will be developed through formal training and mentoring provided by STEM Center staff and engineering faculty in the form of weekly in-person workshops, online modules, and five project presentations given to a variety of audiences including participantsŠ—È peers, local K-12 audiences, and engineering industry professionals. Participants will be expected to dedicate 3 hours per week to the program and compensation will be given to all participants in the form of a $600 stipend and a certificate of completion. We will use surveys, interviews and basic metrics to evaluate the overall impact of the program and the attainment of its four primary participant objectives: 1) completion of all aspects of the program, 2) increase of self-efficacy in technical communication, 3) use and delivery of effective presentation strategies, and 4) formative feedback on individual experiences in the program. In addition to the direct impact on our engineering undergraduates, this program has a critical outreach and recruitment component built-in. We anticipate 650 K-12 students learning about engineering and SIUEŠ—Ès program from the participantsŠ—È presentations. To achieve program sustainability, the team will work with engineering administration to integrate elements of the curriculum into the engineering senior capstone experience. Concurrently, the STEM Center will work with the School of Engineering, Office of Educational Outreach, and Kimmel Student Involvement Center to offer the full experiential learning program for credit or recognition on transcripts

Author(s)	Chuck Harper
Title	SIUE Xfest / Manual Cinema
Award	$15760
Abstract	The SIUE Department of Theatre and Dance proposes to bring Chicago-based theatre ensemble Manual Cinema to SIUE campus in September 2014 for a five-day residency as part of SIUE's Xfest. Manual Cinema will perform a world premiere full-length production (not yet titled) and will also conduct master classes, seminars and question/answer sessions with departmental and university students. Manual Cinema combines handmade shadow puppetry, cinematic motifs, and live sound manipulation to create immersive theatrical stories. This multi-faceted approach to performance makes them an ideal company for Xfest (which features multi-disciplinary artists) and for university students, as the ensemble draws on a wide range of disciplines and skills which will make the master classes and workshops attractive to a wide variety of university students.

Author(s)	Jessica Harris, Bryan Jack, Rowena McClinton
Title	The Long Struggle for Civil Rights: Slavery to Freedom
Award	$18181
Abstract	HIST 130, The History of Black America, is a 3 credit hour course in the core curriculum of the Department of Historical Studies and the only mandatory course for the Black Studies minor. The objective of HIST 130 is to introduce students to the history of African Americans from slavery to the present, with a particular emphasis on a number of key social, political, and cultural developments shaping their experiences. From 1619, when the first enslaved Africans arrived in colonial North America, to the passage of the Civil Rights Act of 1964 and beyond, African Americans' long and arduous strides toward freedom, justice, and racial equality constitutes the core thematic thrust of the course. In an effort to bring this narrative of struggle, hope, courage and triumph to life for students and likewise support the College of Arts and Science's and the University's mission to provide experiential learning opportunities, this proposal seeks EUE funds to support a 8-day Civil Rights Pilgrimage. The trip will begin in Memphis, Tennessee with a tour of the National Civil Rights Museum and then continue to Forks of the Road in Natchez, Mississippi, the site of the South's second largest slave market. Students will then journey to a number of other key sites of historical importance to the Civil Rights Movement in the state of Mississippi, have interactive meetings with persons who participated in and witnessed the struggle for freedom, and walk where past and recent ancestors gave their lives. Our main objectives in organizing this trip are to connect slavery and civil rights by deconstructing the artificial barriers often built up between the two and at the same time, expand opportunities for experiential learning, increase students' multi-cultural competence, and empower them to be agents of social change on SIUE's campus and beyond.

Author(s)	Susanne James, Wendy Fuchs
Title	Using Virtual Learning Environments to Embed Experiential Learning Experiences in Undergraduate Courses
Award	$3700
Abstract	The purpose of this proposed project titled Using Virtual Learning Environments to Embed Experiential Learning Experiences in Undergraduate Courses / is to determine the effect of virtual learning environments (VLE) on teacher candidate performance in their instructional methods courses.. Traditionally, experiential learning by teacher candidates could only happen within practicum placements or student teaching. This project will provide immersive virtual learning environments to approximate the traditional classroom setting in order to practice high impact teaching strategies. VLE offer a computer-generated mixed-reality classroom experience that supports teacher candidate practice in pedagogy and content. This project will allow teacher candidates to increase learning through discovery and exploration as they apply evidenced-based instructional literacy strategies with a virtual classroom of five computer-generated, animated student avatars, programmed to react to certain commands made by the teacher candidate. This "practice" in the VLE will allow students to reflect on what they have

learned throughout their teacher preparation program and improve their teaching skills without the pressure of being in front of an actual classroom. Furthermore, teacher candidates will reflect on their performance in the virtual learning environment by using After Action Review (AAR). AAR is a structured review or debrief process for analyzing what happened, why it happened, and how it can be improved, by the participants, instructor, and other teacher candidates. The goal of using AAR after interacting in a virtual classroom is to improve future performance in delivering instruction before the teacher candidate is in front of students in a "real" classroom. Currently, the use of the TLE TeachLive's simulation lab at SIUE is used in a national research study funded by the Bill and Melinda Gates Foundation. This study is examining the efficacy of inservice Biology teachers using high impact teaching behaviors (feedback, questioning, wait time, etc.). With the funding from the EUE grant, the co-directors of this project can expand this study to include undergraduate students.

Author(s)	Martha LaTorre
Title	Redesigning the Early Childhood Education for the Future
Award	$13613
Abstract	The State of Illinois has mandated that all educational programs leading to teacher licensing undergo a total redesign of their programs of study. As we redesign our Early Childhood program, we are keeping in mind that early childhood educators are in high demand in a wide variety of careers. We are designing a program that will allow students to have a choice in careers beyond the early childhood classroom teacher. The EC program leading to licensure will include coursework that helps candidates develop the foundational skills in several areas of high need such as: Dual Language learners, Infant/Toddler development, Early Intervention, Child Developmental Specialist, EC Special Education and STEAM (Science, Technology, Engineering, Arts, Mathematics). Upon completion of the bachelors program or as extra coursework, students can take additional coursework to fulfill the requirements for specialization in these additional areas. Students can opt to complete as many of these strands as they desire. In order to complete this process, we will need to redesign all existing courses and develop many new courses to fill in the gaps for the specializations. We will also be developing a portfolio process to help entry-level candidates use Prior Learning Experiences in place of some of the foundational coursework. This will allow us to better tailor the program to non-traditional students and to help them to more fully utilize coursework taken for a lower level credentials. This grant will allow faculty to fully concentrate on this process and to complete paperwork so that the new program can be submitted to the state in the fall.

Author(s)	Mark McKenney
Title	Development of a Hybrid Course Infrastructure and its Application in CS340: Algorithms and Data Structures
Award	$8336
Abstract	The incorporation of communication and content delivery technology into the university course structure has resulted in the emergence of new and effective

pedagogical models. In particular, the traditional model of an instructor delivering course content to students in a face-to-face setting has been augmented with the incorporation of technology to allow content delivery to happen over a communication network, either asynchronously or in real time. Furthermore, new models have emerged that depart from the traditional teaching model. In the literature, studies show that a thoughtful application of technologies and emerging pedagogical models leads to better student and faculty perceptions and better student outcomes. We propose the development of an adaptable, hybrid course infrastructure that uses free and available technologies to enable courses to be taught as hybrid courses or fully online courses. The infrastructure is adaptable in the sense that it supports various modes of online content delivery and can be used to implement inverted classroom techniques, in which class time is used in a highly interactive manner to provide hands- on learning experiences to students. The inverted classroom model is particularly attractive to computer science courses in which complex tasks involving programming are often designated as homework. In essence, some of the most difficult portions of the class are left for students to complete in isolation, without having the opportunity to practice concepts in the presence of an instructor. Therefore, we propose to apply our infrastructure to the CS340: Algorithms and Data Structures class in the department of computer science. CS340 is the first point in the computer science curriculum at which students are introduced to state of the art algorithms and data structures suitable for use in production environments; thus, CS340 is a course in which more hands-on instruction can have a great impact in terms of student learning. The application of our infrastructure to the CS340 course content will result in a hybrid class with portions of the class conducted in an inverted classroom manner. This proof of concept course will also serve as a medium for evaluation of the proposed infrastructure. Once the CS340 course has been taught using the new infrastructure, we will provide tutorials to the university community on the developed infrastructure and the use of the software packages on which it depends.

Author(s)	Craig Miner, Wendy Fuchs, Susanne James
Title	Video Instruction in Special Education Teacher Training
Award	$5218
Abstract	Many changes are taking place in the field of teacher training, requiring innovative ways to design courses that address standards and improve student learning. YouTube, TED-Ed, and Khan Academy have all demonstrated ways in which video can be used as an effective learning tool. One of the promising practices in higher education involves the use of video to deliver content to take the place of the traditional lecture (Berrett, 2012). Berrett provided a rationale for "flipping" instruction to allow students to view a video to gather content prior to class and use face-to-face class time to expand, extend, explain the content and apply it. To improve the delivery of content online, better use of video is necessary. The goals of this proposal are to develop video production skills and infuse video presentation in both blended and face-to-face courses. To achieve the goals/objectives of this project, the faculty team will meet weekly to discuss ways to incorporate video

	instruction into specific courses (e.g., lectures), tools and skills necessary for video production, and action steps to improve skills of each member in video instruction. Faculty will also identify and complete online tutorials/training in video capture, editing, and sharing. The Camtasia group of the Flipped Learning Ning will be consulted as a professional learning community (PLC). The first products of the project will be development of video directions for specific assignments in one of the courses taught by each team member. As skills in capture, editing, and sharing increase, video lectures will be created and presented in courses. Additionally, three new undergraduate classes will be converted to a hybrid, flipped learning model. The project team will analyze assignment completion/quality, student evaluation of teaching questions specific to video components, and feedback from focus groups. For assignments that includes video, errors and quality of responses will be analyzed. Necessary changes to the lectures or directions can be made based on results. Questions will be added to student evaluation of teaching forms to solicit feedback specific to the video components of the course and student responses will be reviewed by the team and concerns will be addressed. Finally, the teacher candidates in their final semester in the program will be recruited to form a focus group. The aspects of video that have worked best and those that need improvement will be identified.

Author(s)	Elizabeth Moreton, Jamie Conklin
Title	Retaining freshmen through a personal librarian program
Award	$6804
Abstract	Lovejoy Library will develop and implement a personal librarian program that assigns a specific librarian to a group of freshmen to introduce them to the services and collections available from the library. This program will target all freshmen, specifically seeking to assist students who may not have declared a major or who may still be undecided. The goal of the personal librarian program is create relationships with students early in their education and to provide research assistance and guidance so they become part of the learning community at SIUE and feel supported through the transition into college life. Lovejoy Library has subject librarians assigned to each discipline to assist students with their research in that subject area but, most often, they do not work with those students until their sophomore year. The Library also does not have a librarian specifically for students without a major. As a result, these students may not know who to contact when they have research questions. The personal librarian program will connect freshmen with a librarian who can answer questions about the library and campus, inform them of useful events and resources on campus, assist them with research, or direct them to the appropriate assistance for their need. Librarians will market the program to students using mailings of personalized letters, flyers and handouts during freshmen orientation programs, table tents and posters around the library, and periodic emails. In the beginning of the Fall 2014 and Spring 2015 semesters, Lovejoy Library will host an event for freshmen to meet in person with their personal librarian and get to know other students participating in the program. By facilitating personal connections with students early in their education, we hope to reach the 30.7% of students who do not persist to their second year at SIUE. (SIUE Factbook. 2014. Persistence of New Freshmen Cohorts, Fall

	Terms 2003-2012.) We will include assessment components to evaluate student utilization of the program, librarian feedback, and student satisfaction with the program and its components. By evaluating throughout the fall semester, we can adapt the program to target more students or to meet any needs that arise. We will also meet before the spring semester to discuss any changes to the program. Upon completion of the program, we will disseminate results on campus and in the library field through presentations and papers.

Author(s)	Edward Navarre
Title	Modernizing the Quantitative Analytical Chemistry Laboratory Curriculum
Award	$10848
Abstract	The curriculum of CHEM 335, the analytical chemistry laboratory, will be revised to correct errors, enhance the academic rigor of the course, and provide new learning opportunities. The student manual for the class will be rewritten to include greater experimental detail and to produce a comprehensive guide to the laboratory. This is intended to stimulate student engagement with the material and give students a greater appreciation for the care necessary in undertaking the work. New experiments will be devised that have a stronger quantitative basis and that introduce basic instrumentation. The new equipment will make possible analyses that presently cannot be attempted and will provide a more modern approach to chemical analysis. The enhancement of undergraduate education occurs via more thorough training of students in laboratory practice, which carries forward into three other courses for the average chemistry major. The outcome of this project will be a new curriculum for the class that will be shared among the three analytical chemistry faculty. The new and original laboratory experiments that include new equipment will be suitable for publication in a peer-reviewed chemical education journal.

Author(s)	Ann Popkess, Terri Poirier, Christine Durbin, Toni Roucka, Miranda Wilhelm, Katie Ronald
Title	Interprofessional Patient Error Disclosure Simulation Training for Dental Medicine, Nursing, and Pharmacy Students
Award	$7425
Abstract	Interprofessional education is defined by the World Health Organization (WHO) as when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes (2010). Interprofessional education in the health professions is essential to building teamwork, enhancing communication among providers and patients, and ensuring patient safety. Widespread patient error in U.S. hospitals associated with substantial preventable mortality and morbidity, as well as major quality issues, has revealed the inadequacies in costly systems of care delivery (IOM, 2000, 2003). Developing effective teams and redesigned systems is critical to achieving care that is patient-centered, safer, timelier, and more effective, efficient, and equitable (IOM, 2000). In fact, most medical error with patients occur as a result of poor communication (Agency for Healthcare Research and Quality, Patient Safety Primers, http://psnet.ahrq.gov/primerHome.aspx). As a result of a new era of

	transparency in healthcare safety and quality, when errors do occur, the healthcare team must be adequately prepared to disclose rather than to disguise them. To date, few studies have been conducted with interprofessional teams using error disclosure teaching methods. This study will engage healthcare teams of dental medicine, undergraduate nursing, and pharmacy students in an interprofessional education simulation focused on error disclosure. Error disclosure simulations based on best practices in education will be developed. The simulations will use SIUE theater students as standardized patients in the simulations. Participant students will review required preparatory materials on error disclosure, be assembled into teams, and work through error disclosure simulations that will be video-taped. The teams will be de-briefed by faculty immediately following the simulation. Evaluation of student knowledge, attitudes, and self-awareness regarding error disclosure will be measured before and after the simulation. An overall behavior assessment of the error disclosure process will be conducted by viewing the video-taped encounters with the students. Students will be asked to write a guided reflection describing their responses to the experience of error disclosure within two weeks of the experience.

Author(s)	Catherine Santanello, Marcelo Nieto
Title	Medicinal Plants and Tropical Diseases Elective
Award	$11790
Abstract	A major concern among health profession schools and that of our graduating students is the ability to meet the health and pharmaceutical care demands of the rapidly growing racial and multiethnic population in the U.S. Many of our graduating students have admitted feeling ill-prepared to counsel patients on the benefits and/or misuses of herbal medications. While a few medicinal plant remedies are addressed in the curriculum, faculty members generally donŠ—Èt have enough time and/or expertise to address this area of practice. With the growing insurgence of immigrants who rely on non-traditional treatment options and also a growing interest in this area from residents of the U.S., pharmacists should be prepared to counsel patients in areas beyond traditional western medicine approaches. In addition, an increase in the number of immigrants to the U.S. and the increase in travel of U.S. citizens abroad have brought about the introduction of human pathogens, pathogenic insect vectors, and their associated diseases to the U.S. While these diseases are briefly covered in the curriculum, the greatest focus of the SoP is on those diseases that commonly occur in the Midwest. Hence, a greater knowledge of infectious global diseases is imperative for pharmacists who counsel patients who have traveled outside the U.S. or who are non-native residents. / We are planning on taking third-year students to Costa Rica to give them an experiential learning experience focusing on research in medicinal plant use and tropical diseases. To accomplish this goal, we are planning activities in collaboration with University of Costa Rica faculty and staff members of the Carara National Park and Manuel Antonio Park. These activities include lectures, seminars and guided tours of the Natural Products Research Center (CIPRONA) and the national park rainforests. This trip will be offered to the students as an elective course in the Spring of 2015.

Author(s)	Steve Tamari
Title	Virtual Cultural Exchange: Bringing the Muslim World into the SIUE Classroom
Award	$14444
Abstract	This project will add a virtual cultural exchange component to an existing class on the contemporary Middle East and Muslim world to help SIUE fulfill its stated values of citizenship, inclusion and wisdom. Very few SIUE undergraduates take advantage of off-campus international programs. In many cases, the cost is prohibitive. In the case of the Middle East and Muslim world, safety concerns mean that only a handful of students have made it to the region since the last SIUE travel study program to Turkey almost six years ago. Since 2001, the United States has become more engaged with the Muslim world than ever before in its history. Militarily, the US is more intertwined with the Muslim world than with any other population in the world. This is the time to try to find non-violent, peace-building means for our students to engage their Muslim counterparts. /Soliya (www.soliya.net) is a non-profit organization which employs a web-based video conferencing platform to promote inter-cultural dialogue between students in Western countries and students in the Muslim world. This proposal seeks EUE funding to contract with Soliya to add their flagship Connect program to an existing History course "The 20th-Century Middle East" scheduled for the 2015 spring semester. The program provides students the opportunity to discuss contemporary events with counterparts in South Asia, the Middle East, North Africa, and Europe. One of the benefits of the Soliya program that will be of particular interest to the EUE application committee is a built-in program for assessing student learning. Soliya partners with Massachusetts Institute of Technology to measure key attitudes and capacities for peace-building, cross-cultural empathy, and cross-cultural communication and collaboration skills. This project will function as a pilot for future virtual exchanges. It could easily be adapted to courses in other disciplines with multicultural studies components. For those of us with an immediate interest in the Middle East and the Muslim world, there is the potential for future partnerships with universities in the Middle East that could lead to foreign travel and study.

Author(s)	Zhou Bin
Title	Seeking funding to purchase social network analysis software UCINET to support the teaching of globalization and connectivity
Award	$750
Abstract	This proposal seeks EUE funding to purchase the social network analysis software UCINET as part of an innovative design to teach an upper level undergraduate course (Geog451-3) with a focus on globalization and connectivity. Globalization study has become a mainstream focus on college campuses across the United States, and to a great extent, across the world. Many globalization textbooks are available to cover concepts, theories, and various aspects of globalization. However, there is a distinct lack of empirical methods to analyze the connection among participants in globalization. I intend to teach the new globalization course through combining globalization with connectivity. Essentially, teaching concepts and theories of globalization

	will be blended with a hands-on technique component where students learn methods of analyzing the connectivity of global networks. The primary methods will be based on social network analysis techniques, in conjunction with existing geographical analysis techniques. Social network analysis techniques allow analysis of centrality and power, network cohesion, the community and blocks in networks, hypothesis testing, network visualization, and, in conjunction with geographical analysis tools, spatial patterns of global connectivity. The techniques are largely computer-based and develop analytical skills. Existing studies show that technology-based classroom activities help improve effectiveness in learning. Through adding a technique component based on computer and the Internet technologies, the new course design has the potential to enhance the effectiveness of the study of globalization. The proposal seeks EUE funding of $750 to purchase a 25-user site license of UCINET software (contractual services), a critical computer program in social network analysis. This is a onetime payment and forever license and does not involve periodical renewal. Since the Department of Geography manages its own computer lab, there is no need for services or input from the University ITS personnel.