Service-learning Designation Request Form

Course: new proposed Freshman Seminar Course

ARTSSCI 1138.XX

STEM Outreach to K12 Students

Proposer: Betty Lise Anderson, Professor, Department of Electrical and Computer Engineering

1. Has this class previously received an S-designation? Yes No

2. Is this class always taught with a service-learning component? Yes No

3. Please describer the planned service activities to be performed byt eh students in this course.

Students will visit schools, libraries, after school programs and camps, and provide hands-on STEM activities for K12 students. This activity will supplement our current departmental outreach program, which has already developed the projects. We average three to four visits per week year-round, and have visited more than 90 different schools, plus a long list of camps, libraries, etc.

4. Please describe how the planned service activities reflect priorities and stated goals/needs of the community partner(s)?

Teachers, librarians, camp developers, and after-school care providers constantly tell us they need hands-on STEM activities. Our service is advertised only by word-of- mouth, and has grown exponentially (literally, we’ve plotted it) since 2008. Teachers, even science teachers, may want to do these activities but don’t have the time to develop a long list of projects nor the money to buy materials. Our program has reached over 17,000 children. The demand is becoming overwhelming, which is part of the reason fro proposing this course, but at the same time demonstrates that our outreach is serving a real need. Most schools ask us to return again and again.

5. Service-Learning activities are all based on an agreement between three parties each of whom has specific goals/expectations/responsibilities that are necessary to make it an effective service-learning experience.

Please describe goals/expectations/responsibilities for:

a) Faculty

Prof. Anderson, who currently runs the outreach program, has as a goal to continue its exponential growth or at a minimum not let it decline. We have the projects but the program is limited by availability of student volunteers. Creation of this course is a way to try to address that need. Prof. Anderson’s responsibilities are to arrange enough events for all every student to attend at least seven (easy!) and to provide or arrange transportation (no sweat! doing that anyway!). She will also provide speakers from Education (Human Ecology) or other experts to provide guidance to students on how to explain instructions or scientific concepts to various age groups.

b) Students

Students are expected to attend seven lectures, learn the science behind and how to build the most often-used projects, and then help out at a minimum of seven events in the community. They must also lead at least one. Students will write reflection papers on their experiences, writing about not only their observations of the range of circumstances kids live in, but also critiquing the presentation (how could this have been made clearer? Was it at the right level? What was hardest for children to get? What was the hardest step for them to do? How can we make this easier/clearer/cheaper? Why were the kids at school X much more able to do this than the kids at Library Y?). Goals are

Students master presentation of technical content to non-technical audiences

Students master multiple STEM projects appropriate for a variety of age levels

Students serve the community and develop an appreciation for service

Students practice critical skills in writing

c) Community partners

Community partner must communicate clearly the number of students and grade level for each event. They should plan to discuss the science of the project ahead of the vsiti, and review it after. They also must provide care, custody, and control for students in all venues, including controlling disruptive students. They may provide a projector, tables, in some cases a source of water. They may be asked to provide feedback on our presentations

6. Please describe your plans for sustainability and departmental support for offering this service-learning course on a continuing basis.

The Department of Electrical and Computer Engineering has supported the K12 Outreach program since its inception in 2008, providing course release for Prof. Anderson, and financial support for materials and supplies as well as support for a student worker to pack kids and maintain inventory. The program has relied on student volunteers up to now; this course is an attempt to expand the availability of students (most events are during school hours when our students have classes) as well as increase the depth of their participation by providing them the opportunity to participate in many events. Currently volunteers complain that they can only attend a few events per semester because of class conflicts.

**COURSE GOALS**

7. How does the service activity connect with the academic content of the course and how is this content in turn enhanced by the service component of the course?

Students will learn about presenting science concepts to children, how to lead a group of kids through a hands-on project, and practice presentation skills to non-technical audiences. The service component lets them put these skills into practice in real-world situations. Class discussion will also involve sharing observations about the socio-economic status of the kids, race and gender, and how that correlates (or doesn’t) with students’ attitudes about STEM, college, and their own ability to be successful at an initially daunting task (Example: a third-grader being asked to design and build a circuit to light up their initials will often feel it is completely beyond them—until you show them how to do it.)

Student will also be exposed to a wide range of kids from a wide range of backgrounds- from kids in very poor areas who can’t believe you’re going to let them keep the motor they build, yes, even the battery, to kids from wealthy areas who have had many opportunities to build and make things.

8. In addition to course-specific student learning goals, the following general Expected Learning Outcomes are defined for students in Service-Learning courses:

* Students make connections between concepts and skills learned in an academic setting and community-based work
* Students demonstrate an understanding of the issues, resources, assets, and cultures of the community in which they are working.
* Students evaluate the impacts of the service learning activity.

a)  What processes are in place to allow students to reflection and make connections between concepts and skills learned in an academic setting and community-based work

Students will be asked to write reflection papers on these topics, as well as participate in class discussions. They are also required to critique presentations of others and be critique on their own presentations in real classroom settings.

b)  What aspects of the course insure that the students learn about the issues, resources, assets, and cultures of the community in which they are working.

It will hit them immediately when we visit these schools the wide range of need, resources, and expectations in different communities, but just in case they miss it, we will be discussing these things in class.

c)  How does the course promote reflection on and evaluation of the impacts of the service learning activity.

Students will write reflection papers and participate in class discussions based on their experiences and observations in the classroom. We will use these assignments as evaluations.

Measuring student learning outcomes can take many different approaches. For example, you may measure student success in achieving identified outcomes through written-papers, embedded test questions, pre and post-tests, reflection journals, discussions, successful completion of a specified product, focus groups, interviews, and observations.

9. Please describe how student learning, with respect to the goals in #8 above, will be assessed in this course.

1. Students make connections between concepts and skills learned in an academic setting and community-based work

Evaluate via reflection papers, class discussions, and observation of students at the schools and libraries.

1. Students demonstrate an understanding of the issues, resources, assets, and cultures of the community in which they are working.

Evaluate via reflection papers, class discussions, and observation of students at the schools and libraries.

1. Students evaluate the impacts of the service learning activity.

Evaluate via reflection papers, class discussions, and observation of students at the schools and libraries.