

ACS Reform of Introductory Science courses for Non-Majors Course Mini-grants  
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Reform of Introductory Science Courses for Non-Majors  
**Final Report** for Mini-Grants Awarded May 2004

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Title of Project: Re-energizing Superscience  
Date (s) of Project: Summer 2004-Summer 2005

**1. Original Goals and Objectives**

The original goals and objectives of our proposal were to (1) design a new interdisciplinary course for our non-science majors; (2) develop the course using thematic topics; and (3) develop a sound pedagogical strategy which is suited to this particular audience.

**2. Changes in Goals/Objectives**

No changes have been made to our original plan.

**3. Completed Goals/Objectives**

The four members of our team worked diligently throughout the academic year to design a new curriculum/pedagogy that will be taught during the Fall 2005 and Spring 2006. We began by surveying over 150 freshmen students to gather information about scientific topics which they would find interesting to study. From this data we have developed the following course modules with unifying themes for each semester.

**Human & Natural Disasters-Tentative Course Outline (Fall 2005)**

- 1) Introduction to the Earth
- 2) Origin of Life and Evolution
- 3) Social and Cultural Disaster
- 4) Plagues: Past and Present
- 5) Hazards and Risk Assessment
- 6) Biological and Chemical Warfare
- 7) Climatic and Geologic Disasters

**How Things Work-Tentative Course Outline (Spring 2006)**

- 1) The Universe
- 2) Kitchen Chemistry
- 3) Dissecting Small Electrical Appliances
- 4) Sports Physics
- 5) Forensic Science

To develop appropriate pedagogy Bob Nevins and Kristy Stensaas attended several excellent workshops during the summers of 2004 and 2005. Specifically we will incorporate guided inquiry methods into the laboratory components of the courses as well as making the courses more discussion based rather than traditional lecture. When possible we will use case studies to make the material more relevant.

#### **4. Evaluation/Assessment**

We have informal assessments from several Millsaps non-science faculty and students. The course content was viewed favorably by non-science faculty as interesting and applicable to students. Over half of the laboratory activities were evaluated by a group of Millsaps students. The students were asked to judge simplicity of the activities and to try and anticipate potential problems.

#### **5. Lessons Learned**

In hindsight we are now realizing how ambitious our plans were to completely redesign two courses. This project continues to be time-consuming and requires quite a bit of creativity on our parts, especially in terms of pedagogy.

#### **6. Dissemination**

We presented a paper at the ACS Consortium workshop held at Millsaps College entitled "Science as a Liberal Art?". Bob Nevins and I have also shared our ideas with colleagues at several NSF-sponsored Chautauqua courses.

#### **7. Next Step**

We have been awarded an ACS science reform course mini-grant to purchase materials and supplies to implement our courses during the Fall 2005 and Spring 2006. We are currently in the process of ordering the required materials for the laboratory components of **Human & Natural Disasters**.

#### **8. Permission Statement**

The Millsaps College Superscience faculty committee gives the Associated Colleges of the South permission to post our original proposal and the results of our work on the ACS Science Reform website.