



2010 Demonstration Project Full Proposal
Due: June 15, 2010

Project Title: Educating the Educator

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Requested Funding: \$29,250

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1 Overview

We propose an (IC)² initiative based on the theme of “educating the educator” because we (the faculty members of Ithaca College) are largely a product of a very discipline-centered educational system. Since integrative learning is a new paradigm, we think faculty members must first experience it as students before they can effectively use it in research and teaching. Furthermore, we think this experience must be conducted in truly heterogeneous groups with members coming from different disciplines and different points of professional development (such as faculty members and students learning side by side).

Our proposal is built on two main components: an introductory computational course featuring a sophisticated software system (semester 1, focusing on instruction) followed by a project that applies the acquired knowledge, skills, and technology in a discipline specific manner (semester 2, focusing on application). The discipline-specific projects will be sponsored by the participating faculty members as a return to the three credit load reduction we propose they receive for their involvement. These projects will also serve as a very specific form of assessment on the effectiveness of the semester of instruction, which will then be used to tune the second cycle of the initiative.

Clearly, the choice of the software system is very critical for the success of this initiative and is therefore the greatest component of responsibility for the Computer Science department. Specifically, this software system must (i) allow different disciplines to communicate/collaborate with each other, (ii) empower the participants with ways of processing and analyzing data to draw new information, (iii) require a new way of thinking so that all participants (regardless of their background) are roughly at the same starting place, (iv) make possible new forms of scholarship at Ithaca College.

We envision running the instruction/application sequence twice: (i) Spring 2011 [instruction] + Fall 2011 [application], and (ii) Spring 2012 [instruction] + Fall 2012 [application]. In the interest of assessing the success of the initiative, we plan to gather the participating faculty members at the closure of the application semesters for questionnaires, interviews, etc. The strongest form of assessment will of course materialize in the form of publications from the projects initiated during either of the application semesters.

We believe that the two principal challenges of this proposal are the process of managing a course of heterogeneous participants (faculty versus students, participants from different disciplines) and the choice of the most relevant software system (i.e. the computational tool) for the benefit of the college. During the pilot stage, we plan to focus on the process and expand upon Geographical Information Systems (GIS), a computational tool we have explored once before for the curricular needs of the Anthropology and Environmental Sciences departments. Based on experience, we know that GIS has broad applicability to many additional disciplines ranging from Sociology to Marketing to Health Science. Once we understand how to best conduct the process, we hope to expand our service to other computational tools that address different pressing needs of our college (such as Data Analytics1).

This project contributes to the college-wide vision of (IC)² on several levels. On a pedagogical level, the project requires faculty and students to learn together in teams. On a faculty development level, it allows faculty to be students once again for the purpose of practicing integrative learning. Finally, on a disciplinary level, it makes available computation as an enabling tool for integration. Computation allows knowledge workers in any field to manage, manipulate, and analyze data and to cooperate on these tasks with associates in other disciplines. GIS, for example, allows a sociologist, a historian, and a political scientist to study the intricate relationships between the members of a society in an unstable region of the world.

There are several ways that this project can serve as a model for the Ithaca College community. First, it demonstrates the feasibility of structured faculty-student learning groups as a pedagogical technique at Ithaca College. Second, it illustrates the opportunities that come with faculty teaching other faculty, in a formal setting. Third, the project develops a formal learn/practice/use/publish cycle that can be replicated by other department (in particular) and schools (in general).

2 Project Description

(a) Specific objectives

Faculty participating in the courses will

- understand the technology taught in the course deeply enough to integrate it into their research and teaching;
- produce a report and product integrating the technology from the course;
- understand how the technology is used in other disciplines;
- understand the technology taught in the course and be able to apply it to solve problems in their major;

Students participating in the course will

- participate in a project that applies the technology to a problem in their discipline;
- function successfully as a member of a collaborative, technical team;
- present their results in a public forum such as the Whalen symposium.

The project leaders will

- understand the strengths and weaknesses of student-faculty learning groups;
- understand how technology can be applied in research in multiple disciplines;
- understand the technology needs of students across disciplines.

The Ithaca College community will

- learn whether student-faculty hybrid courses are a feasible pedagogical approach at Ithaca College;
- understand the potential and benefits of faculty teaching faculty in a formal setting;
- discover which disciplines can deeply integrate technology into their teaching and research and what resources will be needed to complete this integration.

(b) Methods

We structure this initiative as a four-step process. Prior to the semester of instruction we survey the faculty to determine the computational needs that are beyond their experience and expertise. We apply this information to customize the class for the participants. Following the class, we help faculty participants to sponsor a project in their discipline that integrates the computational skills that they mastered in the class. Finally, we facilitate a series of meetings where the faculty participants reflect on the experience, provide feedback for future iterations and explore publication opportunities emerging from their discipline-specific project.

- The course will run twice, once in the spring of 2011 and once in the spring of 2012. The format will be a fusion of lecture and hands-on computational exercises to teach both the technology and accompanying way of thinking.
- The first offering of the course will focus on GIS. GIS has broad applicability to many disciplines ranging from Sociology to Marketing to Health Science. Once we understand the process, we hope to expand this service to other areas of computation that address the most pressing needs of the Ithaca College community (such as data analytics).
- In each offering of the course, 3 faculty members will be involved and each faculty member will be grouped in teams with 2-4 students.
- Faculty will receive 3 credits reassigned time since they are expected to complete all the material in the course and to sponsor a significant scholarly project in a subsequent semester.
- Participating students will receive 3 credits for a COMP-??? course.
- Computer Science faculty will teach the course but will not be eligible to take the course. The CS faculty member will not receive reassigned time.

- Student-faculty teams will do all assignments and projects together.
- Faculty will be solicited to submit proposals to participate in the course. Depending on the number of applicants, selection may be competitive. We will ensure that there is a diverse representation of disciplines among the faculty in the course.
- The accepted project proposals will be undertaken within one or two semesters following the semester of instruction. These projects will utilize the skills and knowledge picked up during the semester of instruction but will focus on the discipline of the proposing faculty member. Computer Science faculty will provide feedback so that each proposal will be doable within a semester (or a semester coupled with a summer).
- After the completion of the projects, the participating faculty members will meet to discuss publication and funding opportunities that arose as a result of their interdisciplinary efforts. We suspect at least a few will be recognized and pursued since, to the best of our knowledge, there is no program like what we propose anywhere in the country. We also think we will get at least one presentation at a national faculty development conference to showcase IC does to advance the expertise of its educators.

If the first offering of the course fulfills all of the learning objectives, then we may consider bringing in other technology, such as data analytics, early, i.e., in the second offering of the course.

Learning objectives

These are described in bullet (a) of section 2.

Anticipated tangible outcomes / products

- Faculty-student learning groups will be established.
- A model of faculty development based on faculty teaching faculty will be created.
- A learn/practice/use/publish cycle will be established for faculty members at Ithaca College within the framework of integrative learning.
- Participating faculty will complete a discipline-specific project using the technology learned in the course within one semesters of the completion of the course. We anticipate that the work of some participating faculty will be unique enough to be presented, aided by funding requested in this proposal, in local, regional, or national conferences.
- Faculty will present the results of their project in a faculty development talk.
- The students in each student-faculty group will present their project at the Whalen symposium.

(c) Assessments and benchmarks

- Midterm and final exam questions will assess student and faculty understanding of the concepts presented.
- Faculty-Student groups will likely complete two half-semester projects in the course. These projects will be assessed for completion of student learning objectives.
- Students will present the faculty-student project at the Whalen symposium. This presentation will be used to assess students comprehension of the concepts taught in the seminar and for the appropriate use of technology in the project.
- Faculty will present the project at a faculty development symposium. This presentation will be assessed for the inclusion of technology.
- An interview and survey of faculty participants will be conducted by the Department of Computer Science a year following the course to determine whether technology has been successfully integrated into participants teaching and research.

The Computer Science Department is considering the inclusion of a third party expert to assess the extent to which the participants meet the initiatives goals. If this proves feasible, we will use the external party to provide instruments and to assess the faculty and project objectives.

(d) **New course details**

The course will run as an experimental course. Appropriate paperwork will be submitted to the H&S curriculum committee by 1 October of the appropriate year.

(e) **Timeline**

Fall 2010

- Advertisement of the seminar through email, announcements in formats such as Intercom, a web page promoting the program, announcement in faculty chair meetings, etc.
- Sessions will be held by the CS department to solicit information from the IC community to recognize discipline specific computational opportunities.
- Solicitation of faculty applications and evaluation of applications.
- Normal class preparation.
- Coordination with ITS to ensure that the appropriate software is installed on laboratory computers.
- Initial meetings with faculty to prepare them for the material and to provide resources, and to ensure that they have the appropriate software installed on their computers.

Spring 2011

- First offering of the course.

Summer 2011

- Assessment of the spring course and adjustment of the project as necessary.
- Completion of steps 1 and 2 as outlined in Fall 2010.
- Faculty participants begin working on discipline-specific project.

Fall 2011

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- Solicitation of faculty applications and evaluation of applications.
- Normal class preparation.
- Coordination with ITS to ensure that the appropriate software is installed on laboratory computers.
- Initial meetings with faculty to prepare them for the material and to provide resources, and to ensure that they have the appropriate software installed on their computers.
- Faculty participants from spring 2011 complete discipline-specific project, possible presentations at appropriate conferences.

Spring 2012

- Second offering of the course.
- Student presentation of projects from the fall of 2011 at the Whalen Symposium.
- Faculty presentation of projects from the fall of 2011 at the May Institute of the Faculty Commons at Ithaca College.

Summer 2012

- Assessment of the spring course.
- Survey and assessment of faculty participants in the Spring 2011 course.

- Faculty participants from spring 2011 complete discipline-specific project, possible presentations at appropriate conferences.
- Presentation of the results of this initiative and assessment to the Provost.

(f) **Participant Faculty Members from Computer Science**

All faculty members are in the Department of Computer Science. Administrative functions including the development of surveys, contact of potential participants, completing of curriculum paperwork, etc. will be done by John Barr and assisted by other faculty members. All faculty members will participate in the review of candidates and in the selection of course contact.

John Barr (contact person). Will provide administrative support for the project. Professor Barr has taught extensively in the area of web programming and FLASH programming,

Ali Erkan. Provides expertise in geographical information systems (GIS) and scientific computing. Professor Erkan has taught introductory level courses in GIS and MATLAB and is a co-PI on a grant that is investigating the inclusion of problems from the STEM domain in programming projects.

3 Budget

| Proposal Budget | | | | | | |
|--------------------------|------------------|-----------------|------------------|-----------------|------------------|--------------|
| Semester | Fall 2010 | Spr 2011 | Fall 2011 | Spr 2012 | Fall 2012 | Total |
| Expenses | | | | | | |
| Faculty Release | | | | | | |
| Number of credits | 0 | 9 | 0 | 9 | 0 | 21 |
| Cost | \$0.00 | \$11,700.00 | \$0.00 | \$11,700.00 | \$0.00 | \$23,400.00 |
| External | \$0.00 | \$0.00 | \$1,000.00 | \$0.00 | \$1,000.00 | \$2,000.00 |
| Student wages | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |
| Admin support | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |
| Travel | \$0.00 | \$0.00 | \$1,500.00 | \$0.00 | \$1,500.00 | \$3,000.00 |
| Supplies | | | | | | |
| Office | \$0.00 | \$50.00 | \$50.00 | \$50.00 | \$0.00 | \$150.00 |
| Lab | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |
| Postage | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |
| Printing/Computer | \$0.00 | \$150.00 | \$200.00 | \$150.00 | \$0.00 | \$500.00 |
| Computer | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |
| Total Supplies | \$0.00 | \$200.00 | \$250.00 | \$200.00 | \$0.00 | \$650.00 |
| Small Equipment | \$0.00 | \$100.00 | \$0.00 | \$100.00 | \$0.00 | \$200.00 |
| Entertainment | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |
| Honorariums | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |
| Total | \$0.00 | \$12,000.00 | \$2,750.00 | \$12,000.00 | \$2,500.00 | \$29,250.00 |
| Program Revenue | | | | | | |
| Tuition | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |
| Fees | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |
| Gifts/Grants | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |
| Total | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |

4 Required Signatures

1. Proposal Author
2. Co-author(s)/Participants
3. Department chair
4. Sponsoring chair