Assessment Strategy
Integrated Quantitative Science Course (IQS)

Problem Statement: In order to prepare to solve the big problems in science today, students need to work in interdisciplinary teams. This requires understanding of concepts and tools from multiple disciplines.

Program Goal(s): Better equip our students who go to graduate school or research labs to draw on tools and ideas from multiple disciplines. Better equip faculty for interdisciplinary research and course development

Outputs *(immediate, measurable, direct products)*

- Number of students enrolled in and completing IQS sequence each year
- Number of faculty participating in training for and teaching of the IQS course
- Lecture and lab materials produced for the IQS courses.
- Number of students from IQS course involved in summer research in each of summers 2010 and 2011
- Number of interdisciplinary undergraduate research projects that arise from the course

Outcomes

Short-term

- Increased appreciation for the value of interdisciplinary learning
- Increased disciplinary understanding in each of the 5 disciplines among students who take the first-year IQS course. (Students who take this course reach the same level of understanding in each of the individual disciplines as a student who takes the more traditional introductory course in that discipline.)
- Increased interdisciplinary understanding in faculty as seen in the quality of integration of disciplines in lectures and labs

Medium Term

- Increased number of students pursuing and engaging in cross-disciplinary opportunities throughout their 4-years at Richmond and beyond
- Increased use by science/math/computer science faculty at Richmond of connections to and tools within the other science/math/computer science disciplines in their discipline-based courses

Long Term

- Our students are better equipped in graduate school and research labs to draw on tools and ideas from multiple disciplines to solve complex problems.
- The science curriculum at UR is changed to include an option for students to begin with a course that integrates the introductory material from each of the science/math/computer science disciplines and includes options for students to build on this experience in later upper level interdisciplinary science/math/computer science courses.

EVALUATION FRAMEWORK

Evaluation Questions for OUTCOMES

1. How effective was the IQS course in teaching science to students, including both the discipline-specific topics and interdisciplinary connections?
2. How does completing the IQS course effect subsequent academic experience of the student, including coursework and research projects?
3. Are concepts from each discipline integrated in lectures and labs developed for the IQS course?
4. How did teaching the IQS course change the way in which faculty taught other courses?

A series of 13 possible indicators/measures related to these questions, and 8 data collection methods have been developed. Many of these indicators and methods were drawn from (Mansilla, 2004) and (Lopatto, 2010).

References

Mansilla, Veronica Boix (2004). Assessing student work at disciplinary crossroads, *Goodwork Project Reports Series, #33,* *http://www.goodworkproject.org/publications/papersbynumber.htm*

Lopatto, David (2010). The Research on Integrated Science Curiculum (RISC) Survey (2010). http://www.grinnell.edu/academic/psychology/faculty/dl/risc (accessed May 2010).