Mentoring and Community Involvement within an Integrated Sciences First-Year Program (ISFP)

Christina Cianfrani, Assoc. Prof. of Hydrology and Sarah Hews, Asst. Prof. of Mathematics
School of Natural Science, Hampshire College, Amherst, MA

Hampshire College
Hampshire College is a small liberal arts college located in central Massachusetts. It is known for its distinctive programs which feature:
- Individualized concentrations
- Narrative evaluations
- Capstone projects for all students
- Close faculty mentoring

Goals of the Integrated Sciences First-Year Program
Authentic introduction to the nature and process of science for first-year students
- Introduce science as a collaborative and interdisciplinary endeavor
- Develop scientific mode of inquiry
- Create mentor networks
- Build intellectual community

Integrated Sciences First-Year Program (ISFP)

<table>
<thead>
<tr>
<th>ISFP I (Fall)</th>
<th>ISFP II (Spring)</th>
<th>ISFP III (Summer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative courses</td>
<td>Independent Design Projects</td>
<td>Summer Research Intensive</td>
</tr>
<tr>
<td>40 students (Gen Ed + Concentrators)</td>
<td>8 students</td>
<td>8 students</td>
</tr>
</tbody>
</table>

Learning Inquiry
- See relevance of science
- Complete experiments that address research questions
- Analyze quantitative data
- Present data and findings

Intro to Scientific Community
- Create social groups and networks
- Experience what it means to be a scientist
- Create feeling of belonging in Natural Science and at Hampshire College
- Introduce range of science mentors (peer and faculty)

Learning Inquiry
- Identify and synthesize primary literature
- Develop testable research questions
- Write proposals and begin to implement projects
- Communicate projects to broad audience

Building Scientific Community
- Experience mentorship in STEM (peer to peer, near-peer, faculty-student)
- Strengthen social groups and networks
- Create intellectual community
- Strengthen feelings of belonging
- Broaden network of mentors
- Model and introduce scientific communities

Goals of the Integrated Sciences First-Year Program
- Introduce science as a collaborative and interdisciplinary endeavor
- Develop scientific mode of inquiry
- Create mentor networks
- Build intellectual community

Assessment
- Narrative evaluations
- Student self-evaluations
- Longitudinal study
- Pre/post surveys
- Interviews

Future Steps
- 3-year assessment
- Reimagining co-teaching
- Broaden number of faculty both within and beyond sciences
- Explore different systems
- Create exportable modules

Assessment Findings
Assessment findings to date confirm we are meeting program goals. The quotes below represent themes identified through analysis of assessment instruments.

- The biggest thing is how collaborative [science] is. Here, in the program, we're doing it in groups and really focusing on sharing our knowledge and helping each other to grow in the science learning.
- It's nice to be around people from the energy class and the modeling class and see different sides of the same kind of questions.
- Independent work doesn’t mean doing things on your own.
- Collaboration is a huge, huge thing.
- [The professor is] really paying attention. She's enthusiastic when she walks in the door.
- [At the conference] I was like, “wow, I could potentially be an ecological engineer.”
- You are held accountable by working with other people, even though we’re doing our own independent things, we’re working together and it’s like a compassionate, enthusiastic accountability.
- We’re all going through [ISFP-III] together, so it has a really awesome community.

Acknowledgements
- Dr. Jason Tor and Dr. Seeta Sistla; Dr. Lucy Innovation in Education Fund; Kern Center Grants for Education; Hampshire College; Our students