

End-of-Program Review 2006-07
Compelling Intellectual Experiences and Successful Pedagogical Practices
Scientific Inquiry Programs

Program Name	Faculty	For purposes of helping faculty reflect on the range of teaching practices and experiences at the college, please identify the most compelling intellectual experience(s) in your program or the most successful or innovative pedagogical practice in your program.
Algebra to Algorithms: An Introduction to Mathematics for Science and Computing	Sheri Shulman, Rachel Hastings	We concentrated a lot on analyzing the data, so rather than learning formulae, students were learning to see patterns in data and the formulae that can capture those patterns.
Analyzing the World	Paula Schofield, Andy Brabban	Five-week-long group research projects on the JFK assassination, culminating in a PowerPoint presentation and poster presentation. Each group took an aspect of this historical event and carried out extensive research and analysis of sources. Also, allowing significant re-writes of lab reports with extensive faculty feedback. Students really mastered the technique of technical writing.
Computability: The Scope and Limitations of Formal Systems	Brian Walter, Neal Nelson, Richard Weiss	It's tough to identify "the most compelling intellectual experience", but our spring quarter seminar, which integrated computer science, mathematical logic, philosophy of mind, cognitive science, molecular biology, music, and the art of M.C. Escher (organized around Hofstadter's 'Godel, Escher, Bach: an Eternal Golden Braid') surely ranks up near the top.
Computer Science Foundations	Neal Nelson, Brian Walter, Richard Weiss	Mathematical Thinking, Problem-Solving, Designing Computer Programs to Solve Problems.
Data and Information: Quantitative Ecology	Judy Cushing, Richard Weiss	The case study that led to the term project.
Environmental Analysis: Chemistry and Geology of Aqueous Systems	Jeff Kelly, Clyde Barlow, Jim Stroh	Writing divided by quarters: Fall - emphasis on field and lab notebook: weekly faculty feedback. Winter - on report/paper: multiple drafts, peer review faculty feedback. Spring - oral and visual presentations: PowerPoint, excel, digital images.

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History and Philosophy of Biology: Life and Consciousness	Kevin Francis, David Paulsen	Our most successful recurring activity was the use of the specific questions (6-10) to guide small group seminar discussions. These questions typically required student to comprehend and assess specific passages. The format encouraged broad participation in a meaningful, structured way.
Industrial Biology and Chemistry	Paula Schofield, Andy Brabban	Career development: this series of activities and workshops culminated in mock interviews of students by faculty and career development staff, where students were interviewed for "mock" jobs at biotech companies. Their preparation in terms of writing resumes and cover letters, and for the interview was astonishing. Each student was very articulate in the interview, and was able to talk about their work and their achievements. We have never done this activity before and we would certainly do it again.
Making Milk and Meat: Is Organic Better?	Mike Paros	Teaching in context of real-world experiences: weekly farm visits, inquiry-based learning, must be active!
Mathematics in the History of Science	Neal Nelson, Brian Walter	Mathematics in a historical context critical reasoning integrated with math logic.
Methods of Applied Mathematics	David McAvity	Using Mathematics to visualize three dimensional surfaces, and phase portraits for systems of non-linear differential equations. Using student presentations as a way to see applications of mathematical methods. The most compelling intellectual experience was from a student who was able to make substantive connections between ballet and strange attractors in a way that enhanced her ballet performance and helped illustrate the mathematical concept we were studying.
Molecule to Organism	Lydia McKinstry, Jim Neitzel, Clarissa Dirks	1) Group research projects (spring) 2) Peer reviewed research proposals (Winter) 3) Interdisciplinary cell and molecular biology and virology assignments (Fall) 4) Interdisciplinary literature reading assignments and questions/talking points for seminar discussions (F, W & S).

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Physical Systems	EJ Zita	Student research projects. Via a series of research workshops, students developed research questions and hypotheses in winter quarter, and planned methods of inquiry. In spring quarter, they carried out their inquiries and made several presentations, of their research in progress and of the finished work. Students did creative work and we learned quite a lot from each other, especially about * constraints on candidates for dark matter from recent observations of galaxy collisions, * gamma ray burst mechanisms, and * solar flare mechanisms.
Trace Metals Analysis: Inductively-Coupled-Plasma Mass Spectrometry	Clyde Barlow, Jeff Kelly, Jim Stroh	The core of the Trace Metals Analysis class is applying theory to practice. Students apply performance criteria from professional methods and their work and use these criteria to help establish their role as a competent analysts in written and oral communications.