

Honors Science Track Interdisciplinary Proposal
Meeting Notes from September 18, 2018

Present:

Heidi Bell, Associate Dean and Faculty, Dorothy and Bill Cohen Honors College

Holger Meyer, Associate Professor and Director of Physics

David Eichhorn, Chair of Chemistry Department

Moriah Beck, Associate Professor of Chemistry

Our idea for an Honors Science Track and Minor would be to offer “core” courses in each discipline that offer separate lab sections for honors students (defined by H.S. GPA, science courses, ACT scores, etc.?) that are more inquiry-driven labs and share a set of common scientific core principles.

Honors Science Track - Students choose 3 of 4 Cores and complete one semester of Honors option lab section in each:

1. BIO210H/211H labs (each is 4 CR: 3R/3L)
2. CHEM 211H/212H labs (each is 5 CR:3R/4L)
3. PHYS 213H/214H or 313H/314H labs (even considered a joint 213/313H and/or 214/314H lab) (each is 5 CR: 4R/3L)
4. GEOL 111 (4 CR: 3R/2L) and GEOL 320 (4 CR: 1R/6L) – pending approval
+ Research experience – capstone or honors thesis completion after 2 semesters of research in one of these departments

Honors Science Minor - Students would enroll in the Honors option for six of the Honors option lab courses in Physics, Chemistry, and Biology (and/or Geology)

1. BIO 211H + 212H = 8 CR
2. CHEM 211H + 212H = 10 CR
3. PHYS 213/313H + 214/314H = 10 CR
4. GEOL 111 + GEOL 320 = 8 CR
+ Research (BIO 499, CHEM 669/690, PHYS 481 or GEOL 640) = 1-4 CR

Common Core Experiences

- Emphasize transition from expository lab experiments to course-based undergraduate research and/or guided-inquiry labs.
- Focus on the thought process and improving experimental design skills rather than following directions exactly, or even getting expected results.
- Students develop plans of action to solve the problems, carry out those plans, assess the results, and report their findings.
- Students will gain an understanding of the application of fundamental scientific principles to societal issues and problems.

Themes or Guiding Principles:

- Nature of science – scientists seek a systematic organization of knowledge about the universe and its parts.
- The fundamental elements of the scientific method, such as formulating a hypothesis, designing an experiment to test the hypothesis, and collecting and interpreting data.
- Facts are determined by observation and measurement of natural or experimental phenomena.
- Scientific knowledge is based on explanatory principles with verifiable consequences that can be tested by independent observers.
- Although the goal of scientific inquiry is to approach true explanations as closely as possible, its investigators claim no final or permanent explanatory truths. Science changes. It evolves.
- Basic principles that guide scientists, as well as many other scholars, are those expressed as respect for the integrity of knowledge, collegiality, honesty, objectivity, and openness.
- Scientists are trained and employed to be skeptical observers, to ask critical questions, and to challenge knowledge claims in constructive dialogue with their peers.