

## **Characteristics of the Common Core course, The Natural World**

As outlined in the General Education Report (March 2003), the Common Core courses should provide disciplinary content, an interdisciplinary component that encourages students to view the major disciplines as related, and include some instruction in the fundamental literacies. The Natural World core course includes, but is not limited to, the disciplines of Astronomy, Biology, Chemistry, Computer Science, Geology, Mathematics, and Physics.

The characteristics that provide a framework or common structure across versions of The Natural World (NW) offered in any one of these disciplines is outlined below.

### **General Characteristics**

The General Education task force developed a set of characteristics that should be present in all common core courses:

- content should introduce students to the nature of inquiry in the particular discipline
- course should have some interdisciplinary component
- should address ethical issues that arise in the context of course material
- should include instruction in one of the fundamental literacies (writing, speaking, critical thinking, quantitative reasoning, computer literacy, information literacy, visual literacy)

The General Education Report is available at [http://www.iusb.edu/~gened/Forms/GenEd\\_RepRec.pdf](http://www.iusb.edu/~gened/Forms/GenEd_RepRec.pdf)

### **Specific Characteristics of Natural World Courses**

1. Course should have a theme. Choosing a few important and related topics means that topics can be covered more extensively, allowing time for the exploration of the historical and social context of the material. This course is not for the presentation of a broad survey that covers an entire discipline, because such a survey runs the risk of leaving students with the view that the discipline is a body of facts. Students who are likely to take only one course in a discipline need a chance to explore a few ideas in enough depth to really understand them thoroughly. In addition, the "less is more" approach will give students and faculty more flexibility to address connections between fundamental ideas and current events or local community issues.
2. The course may make use of a lab, measurement, observation, or field component. The "lab" component may be flexible. The course does not have to adhere to a strict schedule of lecture and lab every week. Some ways of structuring a 3-credit course with lab include:
  - two 50-minute lectures and one 2-hour lab;
  - one 75-minute lecture and one 3-hour lab;
  - lecture and discussion sections scheduled back-to-back to allow for lecture/discussion some weeks and use of the entire time for lab in other weeks.
3. Include some aspects of historical development and social context for material. Although history should not be the primary focus of the course, some coverage of the historical development of concepts is necessary to understand the scientific process and view science as a field that changes in response to new information. Including the societal context of theories also helps students see how science relates to their lives, culture, other disciplines, and the ethical responsibility everyone (scientists and non-scientists) shares in the application of knowledge.
4. Require students to find, evaluate, and interpret scientific information. Because the coverage of material in these courses will be narrower and because information changes so rapidly, it is important that students develop skills to find and evaluate scientific information. Each course will have assignments or activities that require students to find, evaluate, and interpret scientific information.
5. An understanding of what constitutes a scientific approach to problems and the nature of proof. Students need to understand that science is an approach for constructing understanding about the natural world; science is not simply a collection of facts. Some of the broad principles of a scientific approach include that conclusions

are based on evidence, that evidence is testable and repeatable, and that ideally scientific knowledge is universal, not proprietary. Part of teaching a scientific approach

The Natural World Proposal Form

should include helping students sharpen their ability to distinguish between strong and weak evidence.

6. Emphasize connections between topics and application of principles to new situations or current events. Requiring students to make connections between topics (either within a discipline or across disciplines) and apply concepts to new situations and current events will help them organize their knowledge (and hopefully retain this knowledge). Many of the details of content are quickly forgotten after a course is taken. However, one of the underlying goals for Common Core courses is to recognize commonalities (for example, critical analysis of information in all disciplines) and differences across disciplines (for example, methods used to acquire information and differences in the types of questions that are asked). An emphasis on applying information and making connections between concepts helps address this underlying goal.
7. The concept of change in the natural world. Change is a fundamental part of understanding the natural world and part of scientific reasoning. Two important kinds of change that students should understand are physical and biological changes in the earth and solar system, and the fact that scientific knowledge changes in response to new information.