General Education Outcomes | Area C: Natural Sciences

The following proposed Area C (Natural Sciences) General Education Outcomes were developed and refined by the GEO-Area C workgroup (faculty committee) and reviewed by respondents to an electronic survey (sent to all faculty at the end of Spring 2013 semester). The proposed outcomes are based on input from representatives in multiple disciplines, review of outcomes in similar areas at other institutions, and recommendations from organizations such as the American Association for the Advancement of Science (AAAS).

Upon completion of this coursework, a student will be able to:

<table>
<thead>
<tr>
<th>Current Outcomes</th>
<th>Proposed Outcomes*</th>
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<tr>
<td>Demonstrate an understanding of the scientific method.</td>
<td>1. Apply scientific inquiry and investigation of evidence to critically evaluate scientific arguments.</td>
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<td>Communicate scientific ideas and theories effectively.</td>
<td>2. Communicate scientific ideas and theories effectively.</td>
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<td>Apply models to explain the behavior of commonly occurring phenomena.</td>
<td>3. Apply scientific principles, theories, or models to explain the behavior of natural phenomena.</td>
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<td>4. Apply scientific knowledge and reasoning to human interaction with the natural world and issues impacting society.</td>
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*Additional notes for each proposed outcome:

1. The term scientific inquiry was selected to replace scientific method because of the broader implications of scientific inquiry and its applications in the classroom. The AAAS included this description in the Project 2061 literature:
   
   “Scientific inquiry is more complex than popular conceptions would have it. It is, for instance, a more subtle and demanding process than the naive idea of "making a great many careful observations and then organizing them." It is far more flexible than the rigid sequence of steps commonly depicted in textbooks as "the scientific method." It is much more than just "doing experiments;" and it is not confined to laboratories. More imagination and inventiveness are involved in scientific inquiry than many people realize, yet sooner or later strict logic and empirical evidence must have their day.”

2. We considered removing this outcome to make room for the addition of one new one. However, a majority of survey respondents recommended keeping it, deeming the communication of science imperative.

3. The current outcome language (specifically the word *model*) was a source of confusion (to some). We hope that by including multiple terms, the comprehensibility and application of the outcome will increase.

4. This outcome, or something similar, was included at almost every other institution that we referenced (highly respected local and national two-year and four-year colleges with robust general education outcomes). The committee agreed that examining the relationship between humans and the natural world is a core component of natural sciences.

Submitted by the GEO-Area C Workgroup:

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