UGEC Criteria for Natural Science Core Courses

A core natural science course should meet all of the following criteria.

1. The Natural Sciences

   A course should draw substantially from at least two of the three foundational areas of natural science: biology, chemistry or physics. One of the areas may be dominant, but the other(s) should play an ongoing role, perhaps as background material, applications or examples.
   - Subjects outside these three areas that might easily meet the requirements include, but are not limited to: Agricultural Science, Earth Science/Geology, Environmental Science, and Food Science/Nutrition.
   - The main thrust of the course should be on the science, not primarily on policy, law, history or philosophy, although these are certainly encouraged as relevant points for discussion and debate.

2. The Scientific Method

   A course should contain explanations and illustrations of the scientific method, including the philosophy, methods, scope, and limitations of science. This might include:
   - The elements of science: the philosophy and assumptions of science, objectivity, methods (hypothesis, data, theory, law)
   - The role of human creativity: Science is not a set of recipes or procedures, but involves tenacity, imagination, connections between ideas, and interaction with others.
   - The tentative nature of conclusions: further exploration often leads to modification or rejection of earlier conclusions; science is inherently self-correcting, so conclusions are always tentative.
   - The limitations of science: Science deals with the physical, not the spiritual or metaphysical; objectivity and insight can be compromised by human limitations.
   - The checks and balances of science: reproducibility and verification, peer review, further study.

3. The Informed Citizen

   A course should help prepare students to be scientifically literate, informed citizens.
   - Equipped to understand books and articles written for nonscientists, to understand the data presented and to question and explore conclusions drawn from the data
   - Equipped to make more informed decisions as a consumer, voter and leader.

4. Dealing with Data

   A course should include instruction and practice in understanding the meaning and quality of data.
   - The ability to represent and interpret data in forms such as graphs, tables, and charts.
   - The ability to draw conclusions from data and to question the conclusions of others should also be addressed, with a strong emphasis on the tentative nature of results.