

Ways of Knowing In the Sciences

Mission:

Ways of Knowing in the Sciences (WKS) courses teach principles and foundational knowledge as well as technologies and important applications in different scientific disciplines. Students will explore topics using the scientific method and other tools of science (e.g., problem solving, inquiry learning) and will be encouraged to pursue lifelong scientific literacy. Students will also examine interactions between science and Christianity, including stewardship of nature.

Requirements:

Two WKS courses are required. One shall be designated a *Fundamental Science* course and will be from the biological, chemical, and physical sciences. The other shall be designated an *Applied Science* course and will be from the biological, chemical, physical, and applied sciences (i.e., computer science, engineering, health and human performance, nutrition, and behavioral neuroscience).

Goals:

All *Ways of Knowing Science* courses will offer students opportunities to:

1. Experience a variety of ways to explore the scientific world (these may include, but are not limited to, direct observation, experimentation, and exposure to scientific literature); and
2. Apply scientific principles through critical thinking skills (these may include, but are not limited to, informed decision making, problem-solving and the process of inquiry).

Fundamental Science courses will enable students to

1. Demonstrate an understanding of basic scientific principles and the scientific method; and
2. Develop foundational knowledge in the discipline (examples may include, but are not limited to, atomic structure, Newton's laws, and evolutionary theory).

Applied Science courses will provide opportunities for students to

1. Explore how scientific knowledge fosters an understanding of the natural world;
2. Understand how scientific knowledge is applied to serve communities and engage the natural world; and
3. Explore relationships between science and Christian faith.

Course Objectives:

After completion of a *Fundamental Science* course, students will be able to

1. Experience a variety of ways to explore the scientific world (these may include, but are not limited to, direct observation, experimentation, and exposure to scientific literature);
2. Apply scientific principles through critical thinking skills (these may include, but are not limited to, informed decision making, problem-solving and the process of inquiry);
3. Demonstrate a foundational knowledge in a scientific discipline; (examples may include, but are not limited to, atomic structure, Newton's laws, and evolutionary theory); and
4. Demonstrate an understanding of scientific principles and the scientific method.

After completion of an *Applied Science* course, students will be able to

1. Experience a variety of ways to explore the scientific world (these may include, but are not limited to, direct observation, experimentation, and exposure to scientific literature); and
2. Apply scientific principles through critical thinking skills (these may include, but are not limited to, informed decision making, problem-solving and the process of inquiry);
3. Express an understanding of how science affects the world and themselves;
4. Communicate how scientific knowledge can be applied to serve communities and engage the natural world; and
5. Articulate relationship between science and the Christian faith.

Course Criteria:

1. WKS classes without laboratory sessions will explore at least one question in depth using several of the tools of science.
2. Proposed WKS courses must be approved by the WK Science Committee.
3. Applied Science courses are encouraged to include writing requirements appropriate to subject and class size.
4. Class sections should be limited to 40 students.

[Additional Recommendations:

1. UCOR 3000 and relevant science faculty should collaborate to develop a scientifically robust module on origins.
2. A database of teaching and learning resources on science and Christianity, the limits of science, and philosophy and history of science should be created.

3. Professional development resources should be provided to instructors of existing or proposed WKS courses.
4. A science faculty member should be designated as the WK Science coordinator with load release. This person should be assisted by a committee (known as the Ways of Knowing Science Committee) composed of the department chairs of the CAS Division of Science and Engineering, or their designees.]