The Core Curriculum
1754 King's College Founded
1919 Core Curriculum Introduced
1937 Literature, Political Philosophy, Art, and Music added (6 semesters)
2004 ‘Frontiers of Science’ added and required of all first years

In 1919, Columbia's Core Curriculum was one of the founding experiments in liberal higher education. It remains today the institution's intellectual coat of arms, preparing all Columbia graduates for a lifetime of engaged citizenship. Consistent with AAC&U's high-impact practices, the Core is comprised of a set of common courses required of all students, irrespective of their intended majors, in which the seminal contributions of Western literature, art, music, political philosophy, and science are examined critically and discussed in small seminars.

Frontiers of Science

Frontiers of Science (FoS) is the first-year experience, core science requirement for Columbia College. FoS introduces students to different topics from the forefront of four scientific fields, while instilling and practicing the Scientific Habits of Mind, a set of skills that characterize scientific inquiry, including quantitative reasoning. Weekly lectures provide the ‘text’ while weekly seminars explore the ‘frontiers’ with experiments, simulations, projects, debates, and discussions.

Our Team

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Objectives and Learning Goals

Frontiers of Science has two goals: to teach students how to think scientifically, and to expose them to the research frontiers in four scientific fields. By working to inculcate scientific habits of mind, we facilitate a deeper exploration of the topics discussed, while simultaneously illustrating the relevance of scientific thinking in both academic and non-academic settings.

Students should...

- be able to apply the Scientific Habits of Mind to the content covered in FoS and beyond.
- learn and communicate concepts from four fields of science.
- gain an understanding of, and appreciation for, the relevance of the scientific habits of mind and science itself in everyday life.

Current Assessment Strategy

Formative
- Weekly reading assignments
- Weekly homework assignments
- Smart Sparrow (adaptive-learning) lessons
- Reflections on topics learned at the end of each unit
- Optional: Discussion Board postings, leading discussions of readings, presentation of science related news articles

Summative
- Term assignment on student-selected scientific topic (e.g., paper, poster, or video presentation)
- Midterm exam, followed by one-on-one meeting for instructor feedback and student reflection
- Final exam

Goals for the Institute

- Identify relevant assessments in published literature
- Develop assessment questions on scientific habits of mind, concepts, and attitudes
- Develop grading rubric of assessment questions
- Identify potential confounding variables
- first semester vs second semester, bias from being aware of assessment and time in college classes
- Create calendar/timeline for assessment development, implementation, and analysis
- Assign Assessment Team members responsibilities/tasks for after the conference
- Create plan to introduce assessment to all instructors
- Identify what instructors must do/can’t do to prevent bias of assessment
- Determine the role/involvement of the Center for Teaching and Learning

Targeted Input Desired

Logistics
- Split structure of both pre-and post-test where ‘attitudes’ are evaluated separately
- Medium of assessment - paper vs. computer

Instruments
- Balance of habits, concepts, and attitudes
- Length, both time and number of questions
- Suggestions for ‘attitude’ questions
- Suggestions for ‘rate your confidence’ question supplement
- Type and number of demographic questions