



Sample research course/tutoring plans for 6th-12th grade: This course focuses on online research skills and uses the book, [It's Debatable! Using Socioscientific Issues to Develop Scientific Literacy](#). Activities and homework can be customized based on student skills and interests.

For more info, email ac@acerslane.com or visit acerslane.com to schedule tutoring sessions.

	Middle School Curriculum: "Space Case"	High School Curriculum: "Pharma's Market"
Guiding Question	Do humans have the right to colonize and use resources on extraterrestrial planets?	Should prescription drugs be advertised directly to consumers?
Overview	In 1959, the United Nations created the Committee on the Peaceful Uses of Outer Space (COPUOS). Since then, COPUOS has negotiated five major international treaties regarding the use of space resources. By exploring whether humans have the right to utilize extraterrestrial environments, students will research the manner in which different resources are allocated, the dynamics of international cooperation on Earth, and the ethical considerations of possible impinging on the rights and resources of other potential life forms in space.	In the United States, direct-to-consumer (DTC) advertising was unregulated until 1962, when it became the purview of the U.S. Food and Drug Administration, which ensures that the advertisements are not misleading. DTC advertising raises the costs of pharmaceuticals tremendously over pharmaceuticals that are not advertised. While learning key chemistry concepts related to molecular structures and chemical reactions, students research regulations and processes involved in developing, manufacturing, and distributing pharmaceuticals.
Week 1-2	Project 1: "Who Owns Outer Space?" Students conduct research using various documents and explore the socioscientific issues regarding planetary colonization and resource utilization.	Project 1: "What's in the Bottle?" Students conduct Internet research on commonly prescribed and over-the-counter medications in order to recognize the relationship between chemical formulas and everyday medicines.
Week 3-4	Project 2: "Space Players" Students assume the roles of stakeholders involved in decision-making regarding extraterrestrial settlements. Students debate questions about space colonization and resource usage for a simulated UN.	Project 2: "Vioxx: A Case Study" Students learn about the process of removing a pharmaceutical from the market and examine scientific, ethical, and economic considerations involved in pharmaceutical regulation.
Week 5-6	Project 3: "Planetary Particulars" Students research the relationships between planets and other astronomical bodies relative to the universe, including distance, size, and composition, in order to develop a detailed research poster.	Project 3: "How are Pharmaceuticals Made?" Students research and model molecular structures of common compounds to learn about intermolecular forces and drug interactions. Students also complete an online lab to synthesize aspirin.
Week 7-8	Culminating Project: "United Nations Vote" Students present planet settlement proposals and applications to a simulated "United Nations" for a vote on approval of a planetary settlement.	Culminating Project: "Congressional Hearing" Students research and debate whether DTC pharmaceutical ads should be banned from television. Students contribute to a report and mock legislation for a fictional congressional subcommittee.