

General Education Foundations of Scientific Inquiry (FSI) Course Information Sheet

Please submit this sheet for each proposed course along with 1) a syllabus describing the key components of the course that will be taught regardless of the instructor and 2) assignment guidelines.

Department, Course Number, and Title _____

Indicate when the department anticipates offering this course in 2018-19 and give anticipated enrollment:

Fall: Enrollment____ Winter: Enrollment____ Spring: Enrollment____ Summer: Enrollment _____

As stated in the guidelines regarding courses in the Foundations of Scientific Inquiry (FSI), the aim of these course offerings is:

To ensure that students gain a fundamental understanding of how scientists formulate and answer questions about the operation of both the physical and biological world. These courses also deal with some of the most important issues, developments, and methodologies in contemporary science, addressing such topics as the origin of the universe, environmental degradation, and the decoding of the human genome. Through lectures, experiential learning opportunities such as laboratories, writing, and intensive discussions, students consider the important roles fields such as physics, genetics, chemistry, biology, earth and environmental sciences, evolution, astrophysics, ecology, and planetary and space sciences play in modern society.

General Education FSI Student Goals: Courses fulfilling the GE FSI will provide a minimum of five units and should align with some (not necessarily all) of the following seven general goals:

1. Students will acquire an informed appreciation of scientists, scientific research, and technology.
2. Students will experience the interdisciplinary nature of science.
3. Students will develop information literacy.
4. Students will actively engage in the scientific process of inquiry, analysis, problem-solving, and quantitative reasoning.
5. Students will make evidence-based decisions in a wide array of science and non-science contexts.
6. Students will develop scientific literacy by addressing current, critical issues and topics in science that are personally meaningful in daily life and/or connected to the needs of society.
7. Students will recognize fundamental scientific principles and the connections between different domains of science.

General Education FSI Student Learning Outcomes: Each course should have student learning outcomes listed in the syllabus. These outcomes may be tied to a specific discipline but should be associated with the seven broad categories listed above (please see **Appendix I** for a sample list of possible learning outcomes supporting each goal).

General Guidelines for GE FSI Courses: GE Courses may be upper or lower division, but they should have no prerequisites. Any student should be able to take them and understand the material with the background expected from all UCLA students. While the course may include material related to the history of science and the social and cultural implications of scientific research, **at least half** of the course should be devoted to students actively engaging in the scientific process of inquiry, analysis, problem-solving, and quantitative reasoning (Goal #4).

Please indicate the area/s which you believe this course should satisfy.

Life Science: Physical Science: Life Science Lab*: Physical Science Lab*:

**Please see the additional student learning outcomes and expectations for courses approved as GE FSI Labs.*

Please present a concise explanation of how your course satisfies these criteria.

Which of the seven student learning goals listed on page 1 are you addressing in your course?

What fundamental scientific principles does your class address? Are you making intentional connections between life and physical science disciplines in your course? Does your course explore any current, critical societal issues? If so, what are they?

What class activities (e.g. homework problems, quizzes, clicker questions, projects, etc.) have you designed to help students actively engage in the process of scientific inquiry, analysis, problem solving, and quantitative reasoning throughout the course?

For each course goal listed above, what are the student learning outcomes you will list in your syllabus? In addition, what types of assignments will be given to determine whether students achieve the learning outcomes? (Please provide a sample assignment, term paper/exam, essay prompt, or other form of assessment)

Additional Student Learning Outcomes for experiential learning courses approved as “GE FSI Labs”

GE FSI Lab Definition and Expectations: A hands-on laboratory, computer simulation, demonstration, or field experience that involves active participation in experimental observation, data generation and collection using the techniques, methodologies, and approaches of modern-day scientists. Any lab should be conducted under sufficient supervision by the instructor or a Teaching Assistant (TA). Furthermore, the instructor and TAs should meet regularly outside of class time (minimum weekly or biweekly) to practice performing the lab procedures and/or to review the experimental results. Courses fulfilling the GE FSI Lab requirement will provide a minimum of four units and should align with some (not necessarily all) of the following eight general goals:

1. Students will design, implement, and evaluate an experimental strategy for answering scientific questions, testing a hypothesis, or solving a problem.
2. When possible, students will replicate experiments to allow testing for and interpretation of statistical significance.
3. Students will apply commonly used mathematical concepts and statistical methods (e.g., basic addition, subtraction, multiplication, division, averages, standard deviation, t-test for significance) in their analysis of different types of scientific data they collect.
4. Students will visually depict a quantitative dataset as a chart, graph, table, or mathematical equation.
5. Students will concisely summarize trends and patterns deduced from quantitative and qualitative data to make informed conclusions about their experimental results.
6. When interpreting their results, students will distinguish between the most important and extraneous findings (i.e. identify those that are critical to addressing a question, solving a problem, or supporting/refuting a hypothesis).
7. When interpreting their results, students will infer relationships between controls and experimental variables as well as assess causality and correlation among variables.
8. Students will troubleshoot experimental procedures or methods of analysis to develop a sound scientific rationale for deducing what went wrong and why.

Please present a concise explanation of how your course satisfies these criteria.

How will students in this course actively experiment and engage in the hands-on process of gathering, analyzing, and interpreting data? How will progress towards meeting the student learning outcomes for “labs” be measured/assessed? In other words, what types of assignments will be given to determine whether students are achieving the learning outcomes?