GE Scientific Literacy – Course Approval Description

I. Regulations

The U.C. Davis Requirements for Higher Degrees, Regulation 522, sets forth the Baccalaureate Degree Requirement in General Education. Scientific Literacy is a component of Core Literacies (522-C)**.** Regulation 523 sets forth the Criteria for General Education Certification of courses, stating: "A course in Scientific Literacy instructs students in the fundamental ways scientists use experimentation and analysis to approach problems and generate new knowledge, and the ways scientific findings relate to other disciplines and to public policy." (523-C-7).

II. Interpretation

The objective of the requirement in Scientific Literacy is to create educated individuals who understand the fundamental ways in which scientists approach problems, pose questions, gather data, make conclusions, and then generate new hypotheses for testing. A course certified as meeting this requirement must also show students how scientific findings relate to other disciplines and to public policy.

Students in majors outside of the natural sciences and engineering will take 12-20 units in Sciences and Engineering as part of the Topical Breadth Literacy requirement, but not all such courses may explicitly address the elements specified above. This requirement ensures that each student will take at least one course that does so. The intent is not to focus entire courses on the scientific method, but rather to demonstrate from a practitioner's stance how scientific approaches were used to create the knowledge being taught within a given course and are being used to generate new knowledge. Similarly, extending the findings presented in the course to other disciplines and public policy should be integrated throughout the course and not be treated as an appendix or afterword.

Education Abroad Program courses may be used to satisfy the GE Scientific Literacy requirement if they meet these criteria.

III. Implementation

Lower division "10" and other courses designed for non-science students frequently incorporate the elements required of Scientific Literacy courses. The requirement should encourage instructors of these courses to focus on helping students develop scientific literacy and to worry less about the quantity of material covered. Instructors of introductory courses directed toward science majors may decide to increase the emphasis on these goals, especially when their majors are taking the course for Scientific Literacy credit.

Each major in the biological sciences, physical sciences and engineering must identify one or more required courses that meet the criteria for Scientific Literacy and ensure that applications are submitted for the designation.

The following courses should be able to fulfill this requirement. This list serves as a <u>starting point</u> for analysis and discussion. It includes mainly lower division courses that appear to be designed for non-majors or as introductory courses for science majors. Many other courses may be suitable and will need to be identified after input from majors and departments.

Animal Science 1 (ANS1): Domestic animals and people.
Animal Science 18 (ANS18): Introductory aquaculture.
Animal Science 42 (ANS42): Introductory companion animal biology
Anthropology 1 (ANT1): Human evolutionary biology
Astronomy 2 (AST2): Introduction to modern astronomy and astrophysics
Astronomy 10G (AST10G): Introduction to stars, galaxies and the universe
Astronomy 10S (AST10S): Introduction to the solar system
Atmospheric Science 5 (ATM5): Global climate
Atmospheric Science 6 (ATM6): Fundamentals of atmospheric pollution
Avian Sciences 11 (AVS11): Introduction to poultry science
Avian Sciences 13 (AVS13): Birds, humans and the environment
Biological Sciences 1A, 1B, 1C (BIS 1A, 1B, 1C): Introductory biology
Presumably BIS 2A, 2B, and 2C will also be appropriate.
Biological Sciences 10 (BIS 10): General biology
Chemistry 2A (CHE2): General chemistry
Chemistry 10 (CHE10): Concepts of chemistry
Entomology 2 (ENT2): Biodiversity
Entomology 10 (ENT10): Natural history of insects
Entomology 100 (ENT 100): General entomology
Environmental Resource Science 60 (ERS60): Global environmental interactions
Environmental Resource Science 121 (ERS121): Water and society
Environmental Resource Science 131 (ERS131): Air as a resource
Environmental Science Policy 10 (ESP10): Current issues in the environment
Environmental Science Policy 30 (ESP30): The global ecosystem
Environmental Toxicology 10 (ETX10): Introduction to environmental toxicology
Environmental Toxicology 20 (ETX20): Introduction to forensic science
Evolution and Ecology 2 (EVE2): Biodiversity
Evolution and Ecology 11 (EVE11): Principles of ecology
Evolution and Ecology 12 (EVE12): Life in the sea
Fiber and Polymer Science 110 (FPS110): Plastics in society and the environment
Food Science 1 (FST1): Principles of food science
Geology 1 (GEL1): The earth
Geology 10 (GEL10): Modern and ancient global environmental change
Hydrology 10 (HYD10): Water and power and society
Integrated Studies 8A (IST 8A)?? Special topics in natural science and mathematics
Linguistics 175 (LIN175): The biological basis of language
Math and Physical Sciences 1 (MPS1): General science: science in the news
Microbiology 10 (MIC 10): Natural history of infectious diseases
Neurophysiology, Physiology, Behavior 10 (NPB10): Elementary human physiology
Neurophysiology, Physiology, Behavior 12 (NPB12): The human brain and disease
Neurophysiology, Physiology, Behavior 14 (NPB14): Illusions: fooling the brain
Neurophysiology, Physiology, Behavior 15 (NPB15): Physiology of human aging
Nutrition 10 (NUT10): Discoveries and concepts in nutrition
Philosophy 13 (PHI13): Minds, brains and computers
Philosophy 31 (PHI31): Appraising scientific reasoning
Physics 1A (PHY1A): Principles of physics
Physics 7A (PHY7A): General physics
Physics 9A (PHY7A): Classical physics
Physics 10 (PHY10): Topics in physics for nonscientists
Plant Biology 11 (PLB11): Plants and the biosphere

Plant Biology 12 (PLB12): Plants and people
Plant Sciences 2 (PLS2): Botany and physiology of cultivated plants
Plant Sciences 10 (PLS10): Fruits and nuts of California and the world
Psychology 100 (PSC100): Introduction to cognitive psychology
Psychology 101 (PSC101): Introduction to psychobiology
Science and Society 1 (SAS 1): Critical inquiry into contemporary issues
Science and Society 8 (SAS 8): Water quality at risk
Science and Society (SAS 9): Crisis in the environment?
Science and Society 10 (SAS 10): Water and power and society (same as HYD 10)
Science and Society 20 (SAS 20): Genetics and society
Science and Society 30 (SAS 30): Mushrooms, molds and society
Science and Society 25 (SAS 25): Global climate change: a convergence of disciplines
Science and Society 42 (SAS 42): Earth, water, science and song
Science and Society 90C (SAS90C): Herbal medicine: relevance for the 21st century
Science and Society 90G (SAS90G): Science, society and the environment
Science and Society 140 (SAS 140): Genetics and social issues
Soil Science 10 (SSC10): Soils in our environment
Textiles and Clothing 6 (TXC6): Introduction to textiles
Viticulture and Enology 2 (VEN2) Introduction to viticulture
Viticulture and Enology 3 (VEN3) Introduction to winemaking
Wildlife Fisheries Conservation Biology 10 (WFC10): Wildlife ecology and conservation
Wildlife Fisheries Conservation Biology 11 (WFC11): Introduction to conservation biology

IV. Guiding questions

1. Relevance and specific content: How does this course incorporate a presentation of the fundamental ways in which scientists approach problems, pose questions, gather data, make conclusions, and then generate new hypotheses for testing? How does the course address the ways scientific findings relate to other disciplines and to public policy?

2. Approach: How does the course enable students to learn to identify the fundamental ways in which scientists approach problems, pose questions, gather data, make conclusions, and then generate new hypotheses for testing? How does the course provide opportunities for students to practice relating scientific findings relate to other disciplines and to public policy?

3. Assessment: By what means will the instructor assess whether students have achieved these goals (e.g. homework, presentations, papers, exam questions)?