

# SCIENCE (SCI)

## SCI 100 Science and Math Concepts (Unit: 1)

Prerequisite: Concurrent enrollment in appropriate parent course based on topic.

Student-centered discussion and problem-solving designed to promote understanding of key concepts and enhance student success in the designated parent course. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (ABC/NC grading; CR/NC allowed)

## SCI 101 First Year Experience in Science and Engineering (Units: 3)

Prerequisite: GE Area A2.

A writing intensive first-year experience course which develops identity as a scientist through a semester-long inquiry project. Using case studies students will engage in ethical issues in science and technology and explore social justice concepts as they relate to science; learn how scientists develop and support their theories; develop writing skills in the sciences in a variety of formats including essays, reviews, a podcast, and a poster presentation. (Plus-minus letter grade only)

### Course Attributes:

- E: Lifelong Learning Develop

## SCI 102 Science Concepts: Statics (Unit: 1)

Prerequisites: MATH 227 and PHYS 220; concurrent enrollment in ENGR 102.

Student-center discussion and problem-solving designed to promote understanding of key concepts of statics and enhance student success in ENGR 102. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (Plus-minus ABC/NC, CR/NC allowed)

## SCI 103 Science Concepts: Survey of Chemistry (Unit: 1)

Prerequisite: Concurrent enrollment in CHEM 101.

Student-centered discussion and problem-solving designed to promote understanding of key concepts and enhance student success in the concurrent chemistry course. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. (Plus-minus ABC/NC grading, CR/NC allowed)

## SCI 110 Science Concepts: Human Biology (Unit: 1)

Prerequisite: Concurrent enrollment in BIOL 100.

Student-centered discussion and problem-solving designed to promote understanding of key concepts and enhance student success in BIOL 100. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. (Plus-minus ABC/NC grading, CR/NC allowed)

## SCI 111 Science Concepts: Physics I (Unit: 1)

Prerequisite: Concurrent enrollment in PHYS 111.

Student-centered discussion and problem-solving section. Designed to promote understanding of key concepts and enhance student success in PHYS 111. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (ABC/NC grading; CR/NC allowed)

## SCI 115 Science Concepts: Chemistry I (Unit: 1)

Prerequisite: Concurrent enrollment in CHEM 115.

Student-centered discussion and problem-solving. Designed to promote understanding of key concepts and enhance student success in CHEM 115. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (ABC/NC grading; CR/NC allowed)

## SCI 121 Science Concepts: Physics II (Unit: 1)

Prerequisite: Concurrent enrollment in PHYS 121.

Student-centered discussion and problem-solving section. Designed to promote understanding of key concepts and enhance student success in PHYS 121. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (ABC/NC grading; CR/NC allowed)

## SCI 124 Mathematics Concepts: Elementary Statistics (Unit: 1)

Prerequisite: Concurrent enrollment in MATH 124.

Student-centered discussion and problem-solving. Designed to promote understanding of key concepts and enhance student success in MATH 124. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (Plus-minus ABC/NC, CR/NC grading option)

## SCI 140 Essential Concepts of Physics and Chemistry (Units: 3)

Fundamental concepts of physics and chemistry, from motion, forces, and energy on to atomic structure, molecules, bonding, and chemical reactions. Basic organic and biochemistry. Classwork, 2 units; laboratory, 1 unit.

## SCI 199 Mathematics Concepts: Pre-Calculus (Unit: 1)

Prerequisite: Concurrent enrollment in MATH 199.

Student-centered discussion and problem-solving section. Designed to promote understanding of key concepts and enhance student success in MATH 199. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (ABC/NC grading; CR/NC allowed)

## SCI 201 Science Concepts: Dynamics (Unit: 1)

Prerequisites: ENGR 102; concurrent enrollment in ENGR 201.

Student-centered discussion and problem solving designed to promote understanding of key concepts of dynamics and enhance student success in ENGR 201. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity.

## SCI 205 Science Concepts: Electric Circuits (Unit: 1)

Prerequisites: PHYS 230; concurrent enrollment in ENGR 205.

Student-centered discussion and problem-solving designed to promote understanding of key concepts of circuit analysis and enhance student success in ENGR 205. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (ABC/NC, CR/NC grading only)

**SCI 210 Science Concepts: General Microbiology and Public Health (Unit: 1)**

Prerequisite: Concurrent enrollment in BIOL 210.

Student-centered discussion and problem-solving designed to promote understanding of key concepts and enhance student success in BIOL 210. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. (Plus-minus ABC/NC grading, CR/NC allowed)

**SCI 211 Science Concepts: Computer Programming (Unit: 1)**

Prerequisite: Concurrent enrollment in CSC 210.

Student-centered discussion and problem-solving section. Designed to promote understanding of key concepts and enhance student success in CSC 210. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (Plus-minus ABC/NC, CR/NC)

**SCI 215 Science Concepts: Chemistry II (Unit: 1)**

Prerequisite: Concurrent enrollment in CHEM 215.

Student-centered discussion and problem-solving. Designed to promote understanding of key concepts and enhance student success in CHEM 215. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (ABC/NC grading; CR/NC allowed)

**SCI 220 Science Concepts: Physics with Calculus I (Unit: 1)**

Prerequisite: Concurrent enrollment in PHYS 220.

Designed to promote understanding of key concepts and enhance student success in PHYS 220. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (Plus/Minus ABC/NC; CR/NC allowed)

**SCI 221 Science Concepts: Data Structures (Unit: 1)**

Prerequisite: Concurrent enrollment in CSC 220.

Designed to promote understanding of key concepts and enhance student success in CSC 220. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (Plus/Minus ABC/NC; CR/NC allowed)

**SCI 226 Mathematics Concepts: Calculus I (Unit: 1)**

Prerequisite: Concurrent enrollment in MATH 226.

Student-centered discussion and problem-solving section. Designed to promote understanding of key concepts and enhance student success in MATH 226. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (ABC/NC grading; CR/NC allowed)

**SCI 227 Mathematics Concepts: Calculus II (Unit: 1)**

Prerequisite: Concurrent enrollment in MATH 227.

Student-centered discussion and problem-solving section. Designed to promote understanding of key concepts and enhance student success in MATH 227. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. (Plus-minus ABC/NC; CR/NC allowed)

**SCI 230 Science Concepts: Biology I (Unit: 1)**

Prerequisite: Concurrent enrollment in BIOL 230.

Student-centered discussion and problem-solving. Designed to promote understanding of key concepts and enhance student success in BIOL 230. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (ABC/NC grading; CR/NC allowed)

**SCI 231 Science Preparatory I: Foundations (Units: 2)**

Enhance students' knowledge in the foundational core of biology, chemistry, physics, and mathematics. Covers basic concepts, tools, and approaches.

**SCI 232 Science Preparatory II: Study Skills (Units: 2)**

Emphasis on increasing students' study skills in the context of basic science coursework. Writing and communication skills addressed.

**SCI 233 Science Preparatory III: Projects (Units: 2)**

Builds upon the skills developed in SCI 231 and SCI 232. Develop and work on an individual project with the instructors to put these skills into action. Explore a variety of careers in various science fields.

**SCI 234 Science Concepts: Physics with Calculus II (Unit: 1)**

Prerequisites: PHYS 220 and MATH 227; concurrent enrollment in PHYS 230 and PHYS 232.

Student-centered discussion and problem-solving. Designed to promote understanding of key concepts of electromagnetism and enhance student success in PHYS 230. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (ABC/NC, CR/NC grading only)

**SCI 235 Science Concepts (Units: 2)**

Prerequisite: Concurrent enrollment in BIOL 230 or BIOL 240, CHEM 115 or CHEM 215. Preference is given to students in the Health Career Opportunity Program.

Designed to enhance student success in introductory biology and chemistry courses by emphasizing problem-solving and scientific writing skills. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units.

**SCI 239 Introduction to Health Professions (Units: 2)**

Introduction to the broad array of health professions, helping students make a more informed health career choice. Activities include talks from guest speakers representing various health professions, small group activities, and student projects. Intended for freshmen and sophomores.

**SCI 240 Science Concepts: Biology II (Unit: 1)**

Prerequisite: Concurrent enrollment in BIOL 240.

Student-centered discussion and problem-solving. Designed to promote understanding of key concepts and enhance student success in BIOL 240. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (ABC/NC grading; CR/NC allowed)

**SCI 300 Science Concepts: Physical Chemistry I (Unit: 1)**

Prerequisite: Concurrent enrollment in CHEM 300.

Student-centered discussion and problem-solving section. Designed to promote understanding of key concepts and enhance student success in CHEM 300 and CHEM 351. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. (ABC/NC grading; CR/NC allowed)

**SCI 321 Science Concepts: Quantitative Analysis (Unit: 1)**

Prerequisite: Concurrent enrollment in CHEM 321.

Student-centered discussion and problem-solving designed to promote understanding of key concepts and enhance student success in CHEM 321. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (ABC/NC grading; CR/NC allowed)

**SCI 328 Science Concepts: Human Anatomy (Unit: 1)**

Prerequisites: A college course in biology; concurrent enrollment in BIOL 328.

Student-centered discussion and problem-solving. Designed to promote understanding of key concepts and enhance student success in BIOL 328. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. (ABC/NC grading only)

**SCI 333 Science Concepts: Organic Chemistry I (Unit: 1)**

Prerequisite: Concurrent enrollment in CHEM 233.

Student-centered discussion and problem-solving section. Designed to promote understanding of key concepts and enhance student success in CHEM 333. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (ABC/NC grading; CR/NC allowed)

**SCI 335 Science Concepts: Organic Chemistry II (Unit: 1)**

Prerequisite: Concurrent enrollment in CHEM 335.

Student-centered discussion and problem-solving designed to promote understanding of key concepts and enhance student success in CHEM 335. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (ABC/NC grading; CR/NC allowed)

**SCI 340 Science Concepts: Biochemistry I (Unit: 1)**

Prerequisite: Concurrent enrollment in CHEM 340.

Student-centered discussion and problem-solving section. Designed to promote understanding of key concepts and enhance student success in CHEM 340. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. (ABC/NC grading; CR/NC allowed)

**SCI 341 Science Concepts: Biochemistry II (Unit: 1)**

Prerequisite: Concurrent enrollment in CHEM 341.

Student-centered discussion and problem-solving section. Designed to promote understanding of key concepts and enhance student success in CHEM 341. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. (ABC/NC grading; CR/NC allowed)

**SCI 350 Science Concepts: Cell Biology (Unit: 1)**

Prerequisite: Concurrent enrollment in BIOL 350.

Student-centered discussion and problem-solving designed to promote understanding of key concepts and enhance student success in BIOL 350. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (ABC/NC grading; CR/NC allowed)

**SCI 355 Science Concepts: Genetics (Unit: 1)**

Prerequisite: Concurrent enrollment in BIOL 355.

Student-centered discussion and problem-solving designed to promote understanding of key concepts and enhance student success in BIOL 355. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. Activity. (ABC/NC grading; CR/NC allowed)

**SCI 499 Culminating Experience Continuous Enrollment (Unit: 0)****SCI 560GW Science Writing - GEAR (Units: 3)**

Prerequisite: GE Area A2.

Principles of research, writing, and editing of technical documents and articles for the public understanding of science. Students write publication-quality articles for possible inclusion in *InterSci*, the journal of the College of Science and Engineering. (Plus-minus ABC/NC grading only)

**Course Attributes:**

- Graduation Writing Assessment

**SCI 610 Science Concepts: Principles of Human Physiology (Unit: 1)**

Prerequisites: BIOL 328; CHEM 101; concurrent enrollment in BIOL 212; or consent of the instructor.

Student-centered discussion and problem-solving section. Designed to promote understanding of key concepts and enhance student success in BIOL 212. SCI 235, Science Concepts, and Mathematics Concepts courses may be repeated for a combined total of 4 units. (Plus-minus ABC/NC grading, CR/NC allowed)

**SCI 614 Graduate Writing Skills (Units: 3)**

Prerequisite: Graduate standing. Enrollment priority given to College of Science and Engineering students.

Designed to increase the writing proficiency of graduate students. May not be used to meet MS ATC requirements. (CR/NC grading only)

**SCI 652 SF State Science Partners in K-12 Schools (Units: 4)**

Prerequisites: One upper-division course in student's major field of study and consent of the instructor.

Introduction to science teaching and learning. Students engage in K-12 classroom teaching, examine their own understanding of science, discuss science education literature, and analyze science lessons and student learning. Lecture, 2 units; fieldwork, 2 units.

**SCI 687 Experiences in Supplemental Instruction (Units: 2)**

Prerequisite: PHYS 685 (may be taken concurrently).

Practicum for students who want to become Supplemental Instruction (SI) Facilitators in the College of Science and Engineering. Activity.

**SCI 693 Cooperative Education Program (Units: 1-12)**

Prerequisite: Consent of instructor.

Supervised employment in academically relevant fields of study. Objectives are career development, occupational experience, and educational subsidy. Contact the Cooperative Education Office for more information. May be repeated for a total of 24 units with consent of major adviser.

**SCI 695 Health Professions Colloquium (Units: 2)**

Prerequisites: BIOL 230/BIOL 240, CHEM 115/CHEM 215.

Preference given to students in Health Career Opportunity Program. Designed to prepare juniors and seniors for successful application to health professions schools. Application preparation, mock interviews, standard test preparation, oral presentations of journal articles. May be repeated for a total of 4 units.

**SCI 719 Exploring and Practicing Science Communication (Units: 2)**

Prerequisite: Graduate standing or consent of the instructor.

Communicating about science is a natural part of any scientist's life. Delve into what others have learned about science communication, experiment with tools that communicate our work and goals, and develop skills to engage a broad range of people to how our science is relevant and important.

(This course is offered as BIOL 719 and SCI 719. Students may not repeat the course under an alternate prefix.)

**SCI 750 Science Teaching for Scientists I (Units: 2)**

Prerequisite: Graduate standing or consent of the instructor.

Introduction to practical teaching strategies, science education theory and research, and scientific teaching to SF State graduate students who are teaching science in a variety of contexts. May be repeated for a total of 4 units. (Plus-minus letter grade only)

(This course is offered as SCI 750 and BIOL 750. Students may not repeat the course under an alternate prefix.)

**SCI 751 Fieldwork: Science Teaching for Scientists I (Units: 2)**

Prerequisites: SCI 750 (may be taken concurrently); consent of instructor.

Fieldwork component that accompanies SCI 750 seminar. Fieldwork in a variety of settings from K-12 science classrooms, TA appointment in SFSU College of Science and Engineering course, or other science education setting. May be repeated for a total of 4 units for degree credit. (CR/NC grading only)

**SCI 793 Cooperative Education Program (Units: 1-3)**

Prerequisites: Graduate standing and consent of instructor.

Supervised employment in academically relevant fields of study. Objectives are career development, occupational experience, and educational subsidy. Contact the Cooperative Education Office for more information. May be repeated for a total of 3 units.

**SCI 850 Science Teaching for Scientists II (Units: 2)**

Prerequisites: SCI 750; may be taken concurrently with SCI 851 (fieldwork component); consent of instructor.

Explores issues in science and learning and the larger context of K-12 science education. May be repeated for a total of 4 units. (AB/NC grading only)

**SCI 851 Fieldwork: Science Teaching for Scientists II (Units: 2)**

Prerequisites: SCI 750; concurrent enrollment in SCI 850; consent of instructor.

Fieldwork component that accompanies SCI 850 seminar. Fieldwork can be in a variety of settings from K-12 science classrooms, TA appointment in course in SFSU College of Science and Engineering, or other science education settings. May be repeated for a total of 4 units. (CR/NC grading only)