SCIENCE

The Core science requirement aims to develop critical awareness of the methods and limits of scientific inquiry, while fostering observational and analytical skills, particularly in reference to the natural and physical world. When choosing a science course, students should make sure they have reviewed and met the specified prerequisites for the course prior to enrollment.

Students who are considering careers in science-related fields, including health-related professions, are urged to begin their study of science within the first two semesters after matriculation at GS.

Science Requirement
To fulfill the science requirement, students must successfully complete three courses selected from two of the following Columbia departments or from the list of approved courses below, no more than two of which should be from the same department:

- Astronomy
- Biological Sciences
- Chemistry
- Earth and Environmental Sciences
- Ecology, Evolution, and Environmental Biology
- Physics
- Psychology (Columbia department only, excluding courses numbered at the 2600, 3600, or 4600 level)

Students who matriculate in spring 2023 or earlier may also use international high school leaving exams for which they received at least three transfer credits on the Entrance Credit Report (ECR) in one of the disciplines listed above to fulfill one of the three science requirement courses. Students who matriculate in fall 2023 and later will not be able to receive science credit for international leaving exams.

List of Approved Science Courses
The list of approved courses that fulfill the science requirement includes recommended sequences, science courses for non-science majors, and approved courses from departments not listed above and Barnard.

The following two courses may satisfy both the QR requirement and one science requirement when passed with a letter-grade of C or above. The P/D/F grading option is not available for either of these two courses.

- Foundations of Science (SCNC UN1212)
  Using modern, student-centered, active and collaborative learning techniques, students will engage — through field observations, in-class experiments, computer simulations, and selected readings — with a range of ideas and techniques designed to integrate and anchor scientific habits of mind. Topics covered will include statistics, basic probability, a variety of calculations skills, graph reading and estimation, all aimed at elucidating such concepts as energy, matter, cells, and genes in the context of astronomy, biology, chemistry, earth sciences, neuroscience, and physics.

- FRONTIERS OF SCIENCE (SCNC CC1000)
  The principal objectives of Frontiers of Science are to engage students in the process of discovery by exploring topics at the forefront of science and to inculcate or reinforce the specific habits of mind that inform a scientific perspective on the world. Sample topics include the evolution of human language, brain dynamics, global climate change, the nanoworld, and biodiversity, among others.

GS students interested in taking Frontiers of Science should have earned a minimum score of 16 on the GS Quantitative Reasoning Exam and/or meet the specific criteria listed in the Quantitative Reasoning section of the website by the specified timelines. Prior to enrolling in Frontiers of Science, students should also read the first chapter of the electronic textbook Scientific Habits of Mind and take the self-exam.

Courses Designed For Nonscience Majors

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Recommended Sequences:

- **Science**
  - EEEB UN1001: Biodiversity and CONSERVATION BIOLOGY
  - EEEB UN1010: HUMAN ORIGINS # EVOLUTION and BEHAVIOR BIOL-LIVING PRIMATES

- **Electrical Engineering**
  - ELEN E1101: THE DIGITAL INFORMATION AGE

- **Food Studies**
  - FSEB UN1020: Food and the Body
  - FSPH UN1100: FOOD, PUBLIC HEALTH # PUBLIC POLICY

- **Philosophy**
  - PHIL UN3411: SYMBOLIC LOGIC
  - PHIL GU4424: MODAL LOGIC

- **Physics**
  - PHYS UN1001: PHYSICS FOR POETS
  - PHYS UN1018: WEAPONS OF MASS DESTRUCTION

  Recommended Sequences:
  - PHYS UN1001: PHYSICS FOR POETS
  - PHYS C1002: and Physics for Poets

- **Psychology**
  - Columbia Department only:
    - PSYC UN1001: THE SCIENCE OF PSYCHOLOGY
    - PSYC UN1010: Mind, Brain and Behavior ((Effective Fall 2018, this course will no longer be offered. For students who took this course before Fall 2018, it may be used to partially satisfy the Science Requirement.)
    - PSYC UN1021: Science of Psychology: Explorations and Applications (Effective beginning Spring 2021)

- **Science**
  - SCNC UN1212: Foundations of Science
  - SCNC UN1800: ENERGY # ENERGY CONSERVATION

- **Statistics**
  - STAT UN1001: INTRO TO STATISTICAL REASONING
  - STAT UN1010: Statistical Thinking For Data Science

- **Astronomy**
  - Any 3-point course numbered 2000 or higher

- **Biology**
  - Any 3-point course numbered 2000 or higher

- **Chemistry**
  - CHEM UN1403: GENERAL CHEMISTRY I-LECTURES
  - CHEM UN1404: GENERAL CHEMISTRY II-LECTURES
  - CHEM UN1500: GENERAL CHEMISTRY LABORATORY
  - CHEM UN1604: 2ND TERM GEN CHEM (INTENSIVE)
  - CHEM UN2507: Intensive General Chemistry Laboratory

- **Computer Science**
  - COMS W1004: Introduction to Computer Science and Programming in Java
  - COMS W1005: Introduction to Computer Science and Programming in MATLAB
  - ENGI E1006: INTRO TO COMP FOR ENG/App SCI
  - COMS W1007: Any 3-point course numbered 3000 or higher

- **Computing Science - Philosophy (CSPH)**
  - CSPH G4801: Mathematical Logic I
  - CSPH G4802: Math Logic II: Incompleteness

- **Earth and Environmental Sciences**
  - EESC UN2100: EARTH'S ENVIRO SYST: CLIM SYST
  - EESC UN2200: EARTH'S ENVIRONMENTAL SYSTEMS: THE SOLID EARTH
  - EESC UN2300: EARTH'S ENVIRO SYST LIFE SYST

- **Ecology, Evolution, and Environmental Biology**
  - EEEB UN2001: ENVIRONMENTAL BIOLOGY I
  - EEEB UN2002: ENVIRONMENTAL BIOLOGY II
  - EEEB UN3087: CONSERVATION BIOLOGY (Any 3-point course numbered 3000 or higher except EEEB GU4321 or EEEB GU4700)

- **History-Applied Math**
  - HSAM UN2901: DATA: PAST, PRESENT AND FUTURE

- **Mathematics**
  - Any 3-point course numbered 1100 or higher

- **Physics**
  - PHYS UN1201: GENERAL PHYSICS I
  - PHYS UN1202: GENERAL PHYSICS II
  - PHYS UN1401: INTO MECHANICS # THERMO
  - PHYS UN1402: INTO ELEC/MAGNETSM # OPTICS
  - PHYS UN1403: INTO-CLASSCL # QUANTUM WAVES
  - PHYS UN1601: PHYSICS I:MECHANICS/RELATIVITY
  - PHYS UN1602: PHYSICS II: THERMO, ELEC # MAG

- **Psychology**
  - Any 3-point course numbered 2000 or higher

- **Statistics**
  - Any 3-point course except STAT W3997

*Note: Students electing to take Human Origins and Evolution (EEEB UN1010) and Behavioral Biology of the Living Primates (EEEB UN1011) as a sequence are recommended, but not required, to take EEEB UN1010 before EEEB UN1011.

**Note: 2600-, 3600-, or 4600-level psychology courses may not be used to fulfill the science requirement.

**Note: These courses may serve as a second term of a recommended sequence starting with The Science of Psychology (PSYC UN1001).

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**Additional Courses Approved for the Science Requirement**

Most of the following courses have required prerequisites and/or require instructor approval. Prerequisite and instructor approval requirements can be found in the course descriptions for each course or on the department website.

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**Astronomy**
Any 3-point course numbered 2000 or higher

**Biology**
Any 3-point course numbered 2000 or higher

**Chemistry**
CHEM UN1403: GENERAL CHEMISTRY I-LECTURES
CHEM UN1404: GENERAL CHEMISTRY II-LECTURES
CHEM UN1500: GENERAL CHEMISTRY LABORATORY
CHEM UN1604: 2ND TERM GEN CHEM (INTENSIVE)
CHEM UN2507: Intensive General Chemistry Laboratory
Any 3-point course numbered 3000 or higher

**Computer Science**
COMS W1004: Introduction to Computer Science and Programming in Java
COMS W1005: Introduction to Computer Science and Programming in MATLAB
ENGI E1006: INTRO TO COMP FOR ENG/App SCI
COMS W1007: Any 3-point course numbered 3000 or higher

**Computing Science - Philosophy (CSPH)**
CSPH G4801: Mathematical Logic I
CSPH G4802: Math Logic II: Incompleteness

**Earth and Environmental Sciences**
EESC UN2100: EARTH'S ENVIRO SYST: CLIM SYST
EESC UN2200: EARTH'S ENVIRONMENTAL SYSTEMS: THE SOLID EARTH
EESC UN2300: EARTH'S ENVIRO SYST LIFE SYST
Any 3-point course numbered 3000 or higher

**Ecology, Evolution, and Environmental Biology**
EEEB UN2001: ENVIRONMENTAL BIOLOGY I
EEEB UN2002: ENVIRONMENTAL BIOLOGY II
EEEB UN3087: CONSERVATION BIOLOGY (Any 3-point course numbered 3000 or higher except EEEB GU4321 or EEEB GU4700)

**History-Applied Math**
HSAM UN2901: DATA: PAST, PRESENT AND FUTURE

**Mathematics**
Any 3-point course numbered 1100 or higher

**Physics**
PHYS UN1201: GENERAL PHYSICS I
PHYS UN1202: GENERAL PHYSICS II
PHYS UN1401: INTO MECHANICS # THERMO
PHYS UN1402: INTO ELEC/MAGNETSM # OPTICS
PHYS UN1403: INTO-CLASSCL # QUANTUM WAVES
PHYS UN1601: PHYSICS I:MECHANICS/RELATIVITY
PHYS UN1602: PHYSICS II: THERMO, ELEC # MAG
Any 3-point course numbered 2000 or higher

**Psychology**
Any 3-point course numbered 22xx, 24xx, 32xx, 34xx, 42xx, or 44xx **

**Statistics**
Any 3-point course except STAT W3997

*Note: 2600-, 3600-, or 4600-level psychology courses may not be used to fulfill the science requirement.

**Note: These courses may serve as a second term of a recommended sequence starting with The Science of Psychology (PSYC UN1001).
Special Summer Program
The following special program fulfills two of the three terms of the science requirement.

Earth Institute Center for Environmental Sustainability [EICES]
- Summer Ecosystem Experience for Undergraduates (SEE-U):
  Locations change yearly. Check with the center in the spring semester for details.