

QUANTITATIVE REASONING

Courses that fulfill the quantitative reasoning (QR) core requirement aim to develop critical skills in quantitative analysis and deductive reasoning, which are particularly relevant to the study of science and the social sciences.

QR Requirement Fulfillment

- Scoring a minimum of 600 on the Math SAT or 27 on the math subsection of the ACT within the eight years prior to matriculation;
- Earning a passing score on the GS [Quantitative Reasoning Exam](#);
- Earning a passing letter grade in a course from the list of approved courses;
- Receiving approved transfer credit on the Entrance Credit Report (ECR) in computer science, mathematics, or statistics from international high school leaving exams (e.g., French Baccalaureate, GCE Advanced Level examination, etc.) or courses taken within eight years prior to matriculation worth a minimum of three points each and equivalent to those classes on the list of approved courses below, as determined by the Dean of Students Office.

Computer Science, Economics, Mathematics, and Statistics

Any course selected from the following departments fulfills the quantitative reasoning requirement when passed with a satisfactory letter grade:

- Computer Science (except S1021D, S1022Q)
- Economics (Columbia department only)
- Mathematics
- Statistics

Approved Columbia courses in computer science, mathematics, and statistics may count toward both the QR requirement and the science requirement. Approved transfer credit for relevant courses in computer science, mathematics, and statistics may count toward both the QR and one science requirement as well; however, the course must have been taken within the last eight years prior to matriculation to satisfy the QR requirement.

COLLEGE ALGEBRA-ANLYTC GEOMTRY (MATH UN1003) (or the equivalent) may count toward the QR requirement only.

Foundations of Science

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.

Foundations of Science (SCNC UN1212) satisfies both the QR requirement and one course of the science requirement when passed with a letter-grade of C or above.

Frontiers of Science

The goal of this Columbia Core Curriculum course is to introduce students to the way scientists think. As they delve into questions drawn from fields as varied as neuroscience and astrophysics, students learn why scientists cultivate a sense of scale, why they like to convert data to graphs, and why they are so careful to differentiate correlation from causation. Along the way, students are invited to think about how science might contribute answers to old questions (what is the place of our species in the universe?) and new ones (is continued industrialization an environmentally sustainable proposition?).

FRONTIERS OF SCIENCE-DISC (SCNC CC1100) satisfies both the QR requirement and one course of the science requirement when passed with a letter-grade of C or above. To enroll in Frontiers of Science, students must meet at least one of the following requirements:

- Score of 16 or higher on the GS Quantitative Reasoning Exam
- SAT Math score of 600 or higher within the last three years
- ACT Math score of 27 or higher within the last three years

****Note:** Neither [Foundations of Science](#) nor [Frontiers of Science](#) may be selected for the P/D/F grading option whether or not they are taken towards core requirements.

Approved QR Courses

The following Columbia courses have been approved as satisfying the QR requirement if completed with a satisfactory letter grade. This list is updated annually. If a particular quantitative reasoning course does not appear on the list, students should ask their respective GS advisors about its appropriateness for the requirement. **Equivalent transfer courses may not count toward the QR requirement.**

ECON BC1007	Mathematical Methods for Economics
ECON BC2411	Statistics for Economics
EEEB UN3005	Introduction to Statistics for Ecology and Evolutionary Biology
PHIL UN1401	Introduction to Logic
PHIL UN3411	SYMBOLIC LOGIC
POLS UN3704	RESEARCH DESIGN: DATA ANALYSIS
POLS UN3720	RESEARCH DESIGN: SCOPE AND METHODS
POLS GU4730	Game Theory and Political Theory
POLS GU4700	MATH # STATS FOR POLI SCI
POLS GU4710	PRINC OF QUANT POL RESEARCH 1
PSYC BC1101	Statistics
PSYC UN1610	Introductory Statistics for Behavioral Scientists
SOCI W2220	Evaluation of Evidence
SOCI BC3211	Quantitative Methods
SOCI UN3020	Social Statistics
URBS UN3200	Spatial Analysis: GIS Methods and Urban Case Studies

Note: Barnard students are given preference for enrollment in Barnard courses that may fulfill the QR requirement. Barnard courses that fulfill a core requirement will not necessarily count toward a major at Columbia if a student chooses to major or concentrate in one of these fields. (See individual departments concerning courses approved and required for the major.)

***N.B.:** The italicized text on the course description page for BC1007 regarding calculus requirements for economics majors applies to Barnard College students only.