The Combined Plan Program at Columbia University

The Combined Plan Program is founded on articulation agreements between Columbia University and nearly 100 affiliate institutions nationwide.

To be considered in our competitive review process, we recommend that an applicant successfully meets all of the following:

- Full-time enrollment at an affiliate institution for at least the past three years
- An overall GPA in accordance with the agreement that your institution has reached with Columbia. We recommend that students have a minumum overall GPA of 3.30.
- Successful completion of both the foundational and major-specific prerequisite coursework by the end of the spring semester of application
- Successful completion of the degree and major requirements of the affiliate institution by the end of the spring semester of application
- Favorable recommendation letters: one each from the Combined Plan liaison, a science instructor and a math instructor
- Proficiency in English as directed by Columbia on our website
- Columbia will not expect Combined Plan applicants to have earned letter grades in their classes taken in Spring 2020 if their home school either moved all classes to Pass/Fail, or some variant in which students were allowed to take some classes for a letter grade and others for Pass/Fail marks. This only applies if your school is moved to online instruction for the remainder of the Spring 2020 semester.
- For Fall 2020 and Spring 2021 terms, Columbia will accept prerequisite courses completed at a student's home institution in the format offered, whether online, in-person, or a hybrid model. These courses must be completed for a letter grade.
- Columbia will not accept prerequisite classes taken online before Spring 2020 or after Spring 2021. These classes must also be taken for a letter grade.

Prerequisite Coursework

A student should successfully complete the equivalents of the following Columbia courses at their home institution. Liaisons at each school are responsible for determining which classes fulfill these Columbia prerequisite courses and will advise students accordingly.

Foundational Courses Required of All Majors

Note that some majors may require additional specific courses replacing or adding to the following requirements, detailed in the major-specific course lists.

Mathematics

Calculus I, II and Multivariable Calculus for Engineers and Applied Scientists (Math UN1101, MATH UN1102, and APMA E2000)

Physics

Introduction to Mechanics and Thermodynamics (PHYS UN1401)
Introduction to Electricity, Magnetism and Optics (PHYS UN1402)

Chemistry

General Chemistry I Lecture (CHEM UN1403)

Lab Requirement (choose one of the following two)

Introduction to Experimental Physics Lab (PHYS UN1493/4) *or*
General Chemistry Lab (CHEM UN1500)
Note that some majors require a specific lab in either chemistry or physics, or both.

Computer Science

Introduction to Computer Science and Programming in C/C++, Java (COMS W1004) or Python (ENGI E1006)
Note that some majors require a specific programming language.

Humanities and Social Sciences

27 non-technical credit hours including Principles of Economics (ECON UN1105) and University Writing (ENGL CC1010)
Non-technical credit hours should help a student to learn perspectives and principles of the humanities and social sciences through discussion, debate and writing. Please note that non-technical electives are subject to the review of Undergraduate Admissions. Examples of these courses can be found on our website (https://bulletin.engineering.Columbia.edu/b-elective-nontechnical-courses).

Major-Specific Coursework

Courses noted with a * may be taken either before or during enrollment at Columbia.

Applied Mathematics

Mathematics
Ordinary Differential Equations (MATH UN2030)
Physics
Introduction to Classical and Quantum Waves (PHYS UN1403)
Additional
Introduction to Experimental Physics Lab (PHYS UN1493/4)
Students may take a lab other than Physics lab: Astronomy, Astrophysics, Biology or Chemistry.
Choose one of the following three:
General Chemistry I Lecture (CHEM UN1403) *or*
Environmental Biology I: Elements to Organisms (EEEB UN2001) *or*
Introductory Biology I: Biochemistry, Genetics and Molecular Biology (BIOL UN2005)
Computer Science
Introduction to Computing for Engineers and Applied Scientists in Python (ENGI E1006)
The department strongly recommends Python, but will accept C/C++, Java or MATLAB on a case by case basis.

Applied Physics

Mathematics
Ordinary Differential Equations (MATH UN2030)
Physics
Introduction to Classical and Quantum Waves (PHYS UN1403)
Introduction to Experimental Physics Lab (PHYS UN1493/4)
Additional
Choose one of the following three:
General Chemistry I Lecture (CHEM UN1403) *or* Environmental Biology I: Elements to Organisms (EEEB UN2001) *or*
Introductory Biology I: Biochemistry, Genetics and Molecular Biology (BIOL UN2005)

(Applied Physics requirements cont. on next column)

Computer Science
Introduction to Computing for Engineers and Applied Scientists in Python (ENGI E1006)
The department strongly recommends Python, but will accept C/C++, Java or MATLAB on a case by case basis.

Biomedical Engineering

Mathematics
Introduction to Applied Mathematics: Ordinary Differential Equations and Linear Algebra (APMA E2101)
Or, students must take both an ODE and a Linear Algebra course.
Physics
Introduction to Classical and Quantum Waves (PHYS UN1403)
Chemistry
General Chemistry II Lecture (CHEM UN1404)
General Chemistry Lab (CHEM UN1500)
Computer Science
Introduction to Computing for Engineers and Applied Scientists in Python (ENGI E1006)
Additional
Introductory Biology I: Biochemistry, Genetics and Molecular Biology (BIOL UN2005)
Introductory Biology II: Cell Biology, Development and Physiology (BIOL UN2006)
*Introduction to Electrical Engineering (ELEN E1201)

Chemical Engineering

Mathematics
Choose one of the following two:
Ordinary Differential Equations (MATH UN2030) *or*
Introduction to Applied Mathematics: Ordinary Differential Equations and Linear Algebra (APMA E2101)

(Chemical Engineering requirements cont. on next page)

Major-Specific Coursework

Courses noted with a * may be taken either before or during enrollment at Columbia.

Chemical Engineering Cont.

Physics
Introduction to Experimental Physics Lab (PHYS UN1493/4)
Chemistry
General Chemistry II Lecture (CHEM UN1404)
General Chemistry Lab (CHEM UN1500)
Organic Chemistry I Lecture (CHEM UN2443)

*Organic Chemistry I Lab (CHEM UN2495)
*Organic Chemistry II Lab (CHEM UN2496)
Computer Science
Introduction to Computing for Engineers and Applied Scientists in Python (ENGI E1006)
The department strongly recommends Python, but will accept C/C++, Java or MATLAB on a case by case basis.

Civil Engineering

Mathematics
Introduction to Applied Mathematics: Ordinary Differential Equations and Linear Algebra (APMA E2101)
Or, students must take both an ODE and a Linear Algebra course.
Computer Science
Introduction to Computing for Engineers and Applied Scientists in Python (ENGI E1006)
The department strongly recommends Python over other languages, though it will accept any language.
Additional
Earth: Origin, Evolution, Processes and Future (EESC UN1011) or an equivalent introductory course in Geology/Geosciences
*Mechanics (ENME E3105)

Computer Engineering

Mathematics
Introduction to Applied Mathematics: Ordinary Differential Equations and Linear Algebra (APMA E2101)
Or, students must take both an ODE and a Linear Algebra course.
Computer Science
Discrete Mathematics (COMS W3203)
Introduction to Computer Science and Programming in Java (COMS W1004)
Please note that sufficient knowledge of computer programming is needed in order to take Data Structures in Java (COMS W3134).
Additional
Taking Introduction to Electrical Engineering (ELEN E1201) or an equivalent course for credit is not required, but obtaining roughly equivalent background, through courses or self study, is expected to prepare for the required follow-on courses. There will be an option to take a self-study course over the summer at Columbia.

Computer Science

Computer Science
Discrete Mathematics (COMS W3203)
Choose one of the following two:
Introduction to Computer Science and Programming in Java (COMS W1004) *or*
Honors Introduction to Computer Science in Java (COMS W1007)
Choose one of the following two:
Data Structures in Java (COMS W3134) *or*
Data Structures and Algorithms (COMS W3137)
The department strongly recommends Java and Python though it will accept other languages as long as a Data Structures course in that language has also been completed.

Earth and Environmental Engineering

Mathematics
Introduction to Applied Mathematics: Ordinary Differential Equations and Linear Algebra (APMA E2101)
Or, students must take both an ODE and a Linear Algebra course.

*Introduction to Probability & Statistics (STAT GU4001)
The course must have calculus, including multivariable integration, as a prerequisite.
Chemistry
General Chemistry II Lecture (CHEM UN1404)
General Chemistry Lab (CHEM UN1500)
Computer Science
Introduction to Computing for Engineers and Applied Scientists in Python (ENGI E1006)
The department requires Python for the introductory Computer Science requirement. Only students attending affiliates that do not offer Python may substitute another language.
Additional

*A Better Planet by Design (EAEE E2100)
Choose one of the following two:
*Earth's Environmental Systems: The Climate System (EESC UN2100) *or*
*Earth's Environmental Systems: The Solid Earth System (EESC UN2200)
Choose one of the following three:
Organic Chemistry I Lecture (CHEM UN2443)
Introduction to Classical and Quantum Waves (PHYS UN1403) *or*
Introductory Biology I: Biochemistry, Genetics and Molecular Biology (BIOL UN2005)

Electrical Engineering

Mathematics
Introduction to Applied Mathematics: Ordinary Differential Equations and Linear Algebra (APMA E2101)
Or, students must take both an ODE and a Linear Algebra course.
Physics
Introduction to Classical and Quantum Waves (PHYS UN1403)
Computer Science
Sufficient knowledge of computer programming is needed in order to take Data Structures with C/C++ (COMS W3136) or Data Structures in Java (COMS W3134).
Additional
Taking Introduction to Electrical Engineering (ELEN E1201) or an equivalent course for credit is not required, but obtaining roughly equivalent background, through courses or self study, is expected to prepare for the required follow-on courses. There will be an option to take a self-study course over the summer at Columbia.

Engineering Mechanics

Mathematics
Introduction to Applied Mathematics: Ordinary Differential Equations and Linear Algebra (APMA E2101)
Or, students must take both an ODE and a Linear Algebra course.
Computer Science
Introduction to Computing for Engineers and Applied Scientists in Python (ENGI E1006)
The department strongly recommends Python over other languages, though it will accept any language.
Additional
*Mechanics (ENME E3105)

Major-Specific Coursework

Courses noted with a * may be taken either before or during enrollment at Columbia.

Industrial Engineering, Engineering Management Systems or Operations Research

Mathematics

Choose one of the following three:

Linear Algebra (MATH UN2010) or
Applied Mathematics I: Linear Algebra (APMA E3101) or
Computational Linear Algebra (COMS 3251)

Choose one of the following two:

Probability for Engineers (IEOR E3658) or
Probability Theory (STAT GU4203)

The department wants to emphasize that this course needs to be a full semester of a probability course, not a combined probability and statistics course. This course should be calculus-based and cover how to work with multivariate distributions.

Computer Science A (choose one of the following)

Introduction to Computer Science and Programming in Java (COMS W1004)
Introduction to Computing for Engineers and Applied Scientists in Python (ENGI E1006)

The department strongly recommends Python over other programming languages.

Computer Science B (choose one of the following)

Data Structures in Java (COMS W3134)
Essential Data Structures in C/C++ (COMS W3136)

This course can be covered in any programming language.

Materials Science and Engineering

Mathematics

Introduction to Applied Mathematics: Ordinary Differential Equations and Linear Algebra (APMA E2101)

Or, students must take both an ODE and a Linear Algebra course.

Physics

Introduction to Classical and Quantum Waves (PHYS UN1403)

Computer Science

Introduction to Computing for Engineers and Applied Scientists in Python (ENGI E1006)

The program strongly recommends Python.

Mechanical Engineering

Mathematics

Linear Algebra (APMA E3101 *or* MATH UN2010)
and Ordinary Differential Equations (MATH UN2030 *or* Math UN3027)

or

Introduction to Applied Mathematics: Ordinary Differential Equations and Linear Algebra (APMA E2101)

The department strongly recommends taking ODE and Linear Algebra separately.

Computer Science

Foundations of Data Science (ORCA E2500)

Students must take a substantial equivalent to ORCA E2500 before coming to Columbia. Only students attending affiliates that do not offer an equivalent may take the course at Columbia.

Choose one of the following three:

Introduction to Computer Science and Programming in Java (COMS 1004) *or* MATLAB (COMS W1005)
or Python (ENGI E1006).

Additional

*Introduction to Electrical Engineering (ELEN E1201)
*Mechanics (ENME E3105)

Choose one of the following three:

Introduction to Classical and Quantum Waves (PHYS UN1403) *or*
Environmental Biology I: Elements to Organisms (EEEB UN2001) *or*
Introductory Biology I: Biochemistry, Genetics and Molecular Biology (BIOL UN2005)

This curriculum guide is only applicable to students who began college in Fall 2024. Students who began college in a different term are subject to different admissions policies and a different curriculum guide. Courses listed are accurate as of November 2024.

Important Policies about Prerequisite Coursework

All prerequisite coursework must appear on the home institution's transcript. Columbia requires all official transcripts, and **liaisons must approve all coursework not taken at the affiliate institution**. We will accept AP/IB or other advanced credit from high school as well as placement exams if the credit or exam clearly appears on the home institution's transcript and is approved by the liaison. Columbia reserves the right to have the student demonstrate this knowledge and/or retake this course.

Please note, the applicant must declare an engineering major at the time of application to Columbia. No change of major is allowed after an admission decision has been rendered.

Due to the sequential nature of the engineering major coursework, prerequisite coursework cannot be taken while at Columbia and must be completed by the spring semester of application. Courses noted with * are excluded from this requirement, as they may be taken once at Columbia. Students may present course syllabi to request placement out of these courses once at Columbia.

Major requirements comprise the sequence of courses required to complete a major or primary course of study from the home institution. Degree requirements are courses, as listed in the home institution's course catalog, that are required to obtain a degree from the home institution. A student does not need to complete the full number of course credits required for the degree (e.g., the full 128 credits), as the home institution will accept course credits from Columbia to complete this degree. Subsequently, 3-2 candidates cannot receive their degree from the home institution until the two years at Columbia are successfully completed.

Financial Aid Policies

Financial aid is available for Combined Plan students. Applicants should note:

- Columbia awards no merit scholarships; all financial aid is need-based only.
- Admission to the Combined Plan Program is need-blind for U.S. citizens, eligible non-citizens and undocumented students; financial need does not affect one's chances of admission. Admission to the Combined Plan Program is need-aware for international students applying for aid; financial aid eligibility will be considered in the competitive review process for international students.
- We will cover 100% of demonstrated financial need for all Combined Plan students.
- Financial aid is limited for international students.
- Candidates are not guaranteed the same financial aid package that they may have received at their home institution.

Housing at Columbia

Housing is guaranteed for Combined Plan students in their first year only; there is no guarantee that on-campus housing will be available in their second year. Off-Campus Housing Assistance at Columbia can assist students in their search for housing in the New York metropolitan area.

COLUMBIA UNIVERSITY
IN THE CITY OF NEW YORK

Columbia University
212 Hamilton Hall, MC 2807
1130 Amsterdam Avenue
New York, NY 10027

Undergraduate Admissions
212-854-2522
combinedplan@columbia.edu
undergrad.admissions.columbia.edu/apply/combinedplan