Combined Plans in Liberal Arts and Engineering

Liaison and Advisor for Physical Sequence
Professor Schramm (Physics)

Advisor for Chemical Sequence
Professor Otsuki (Chemistry)

Advisor for Computer Science Sequence
Professor Lengyel (Mathematics)

Occidental College cooperates with the California Institute of Technology and the School of Engineering of Columbia University in several programs of engineering education based on a broad foundation in the liberal arts.

These combined plans provide qualified students with an excellent liberal arts background and advanced-level entrance into either of two outstanding engineering schools. The programs are designed specifically for superior students who have strong preparation in English writing skills, mathematics, and science.

The curriculum offers considerable freedom of choice of an eventual major. Students who, by the end of the first two years, find their interests developing in fields outside of science or technology, may still choose most nonscience majors in the College and graduate after the usual additional two years of course work. Similar options also exist through the junior year for choosing majors in mathematics or most other sciences without loss of time. Thus, in contrast to many engineering programs, students choosing the combined plans do not commit themselves in the first year exclusively to an engineering major. This flexibility is particularly advantageous to capable students whose abilities and interests span many fields.

The 3/2 Combined Plan Program requires completion of three years of work in the liberal arts and sciences at Occidental followed by two years of regular session work at Caltech, or the School of Engineering of Columbia University. This leads to the degree of Bachelor of Arts in the Combined Plan from Occidental and the degree of Bachelor of Science in the selected field of engineering from either Caltech or Columbia.

Students interested in the 3/2 program gain entrance into the engineering school through a strong academic record at Occidental and a recommendation by the Occidental liaison officer on behalf of the faculty. At least a 3.3 grade point average, both in science/mathematics and overall, is required. Those seeking entrance to Caltech must also receive approval from the Caltech Office of Admission.

Occidental also offers an alternative pattern with Columbia known as the 4/2 Plan. In this scenario, a student obtains a regular, four-year Bachelor's degree in science or mathematics at Occidental, followed by two years of work in engineering at Columbia, leading to the M.S. degree in the chosen field of engineering. Columbia also offers graduate joint-degree programs leading to two degrees: the M.S. in Mining or Industrial Engineering and the Master's degree in Business Administration (M.B.A.).
Students entering the programs at Occidental should have received excellent grades in high school English (including writing experience), mathematics, physics, and chemistry. Four years of high school mathematics are required, including trigonometry and a course often called Introductory Analysis (or Pre-Calculus).

Students wishing to enter these programs should apply directly to Occidental.

**Course Requirements for the Combined Plans**

The program of studies for the first three years consists of all of the required courses leading to the degree of Bachelor of Arts as outlined. Unless otherwise exempted, students must begin Mathematics 110 or 114 and either Physics 106, Chemistry 120, or Chemistry 130 (depending on the sequence chosen) in the freshman year. All Occidental requirements must be met by spring semester of the junior year.

**MAJOR:** Students must complete one or two years of physics, two years of mathematics, and one year of chemistry. The three sequences will require additional courses. See the sequence advisor for details.

The Occidental comprehensive examination is waived for 3/2 Combined Plan students.

**Majors in the Combined Plans:** The following is a partial list of the fields currently offered at one or both of the engineering institutions.

**Physical Sequence**
- Aeronautics
- Applied Geophysics
- Applied Mathematics (3/2 only)
- Applied Physics
- Biomechanics
- Civil, Electrical, or Mechanical Engineering
- Communications and Control
- Computer Engineering
- Design Engineering
- Electrical Engineering
- Electronic Circuits
- Engineering Mechanics
- Fluids Engineering and Jet Propulsion
- Industrial Engineering
- Nuclear Engineering
- Operations Research
- Quantum Electronics
- Solid State Electronics

**Chemical Sequence**
Applied Chemistry (4/2 only)
Bioengineering
Chemical Engineering
Mineral Engineering

**Physical or Chemical Sequence**
Environmental Engineering
Materials Science
Metallurgical Engineering
Mining Engineering
Solid State Science (4/2 only)

**Computer Science Sequence**
Computer Science
Operations Research
Industrial Engineering