



Pre-Engineering Track- Columbia University

Total Credits: 51

Students interested in a career in engineering may major in pre-engineering at Yeshiva College or choose a related major, such as chemistry, physics, mathematics, or computer science. **The pre-engineering requirements listed below are preparatory for advanced work in an engineering school. Students will have satisfied the requirements necessary for graduation with a pre-engineering major from Yeshiva College only upon successful completion of an engineering degree from an accredited engineering school.** If you only fulfill the requirement's listed below, and do not complete the courses of your chosen engineering program, you will not get a bachelor's degree from Yeshiva University.

REQUIRED COURSES, 51 CREDITS:

CHE 1045R , General Chemistry 1 () _____	3 Credits
CHE 1046R , General Chemistry 2 () _____	3 Credits
CHE 1047L , General Chemistry Lab () _____	2 Credits
MAT 1412 , Calculus 1 () _____	4 Credits
MAT 1413 , Calculus 2 () _____	4 Credits
MAT 1510 , Multivariable Calculus () _____	4 Credits
MAT 2105 , Linear Algebra () _____	3 Credits
MAT 2601 , Differential Equations () _____	3 Credits
PHY 1051R , General Physics 1 Lecture, <i>Fall</i> () _____	4 Credits
PHY 1051L , General Physics 1 Lab, <i>Fall</i> () _____	1 Credit
PHY 1052R , General Physics 2 Lecture, <i>Spring</i> () _____	4 Credits
PHY 1052L , General Physics 2 Lab, <i>Spring</i> () _____	1 Credit
PHY 2051R , General Physics 3 Lecture, <i>Fall</i> () _____	4 Credits
PHY 2052R , General Physics 4 Lecture, <i>Spring</i> () _____	4 Credits
COM 1300 , Intro to Computer Science () _____	4 Credits
ECO 1010 , Principles of Economics () _____	3 Credits

RECOMMENDED COURSES

PHY 1120 , Modern Physics () _____	3 Credits
PHY 1621 , Introduction to Quantum Mechanics () _____	3 Credits

Notes:

- If you do not or cannot take calc – based physics (PHY 1321) than you must take Electromagnetism and classical mechanics (PHY 1221)
- Pre engineering students must also look at the Columbia requirements for their specific area of engineering.

Engineering Major Specific Courses, Depending Upon Chosen Field

1. Applied Math/ Applied Physics
MAT 1412, MAT 1413, MAT 1510, MAT 2601
PHY 2051, PHY 2052, PHY 1061L/ 2061L
Choose one: CHE 1045 OR BIO 3038C OR both BIO 3207C and BIO 3521C
2. Biomedical Engineering
MAT 1412, MAT 1413, MAT 1510, MAT 2105, MAT 2601
PHY 2051, PHY 2052, PHY 1061L/ 2061L
CHE 1045, CHE 1046R/ CHE 1047L
BIO 1011R/L, BIO 1012R/L
COM/MAT 1504
**Electrical Engineering (ELEN E1201 may be taken summer before entering or while at Columbia)
3. Chemical Engineering
MAT 1412, MAT 1413, MAT 1510, MAT 2105, MAT 2601, COM/MAT 1504
PHY 1061L/ 2061L
CHE 1046R/1047L, CHE 1213R, CHE 1215L
4. Civil Engineering
MAT 1412, MAT 1413, MAT 1510, MAT 2105, MAT 2601
PHY 1221, PHY 1222
COM 1300
**Geology Course (consult with Pre-Engineering Advisor as to how/ when to take this)
5. Computer Engineering
MAT 1412, MAT 1413, MAT 1510, MAT 2105, MAT 2601, MAT/COM 1504
COM 1300, COM 1320
**Electrical Engineering (ELEN E1201 may be taken summer before entering or while at Columbia)
6. Computer Science
MAT 1412, COM 100, COM 1320, COM/MAT 1504
7. Earth and Environmental Engineering
MAT 1412, MAT 1413, MAT 1510, MAT 2105, MAT 2601, MAT 2461, MAT 2462
CHE 1045, CHE 1046R, CHE 1047L
*Choose one: CHE 1213R and CHE 1215L, OR PHY 2051 and PHY 2052R
BIO 3207C, BIO 3521C*
** *Earth and Environmental Sciences (EESC UN2100 OR EESC UN2200, AND EAEE E2100), may be taken while at Columbia*
8. Electrical Engineering
MAT 1412, MAT 1413, MAT 1510, MAT 2105, MAT 2601
PHY 2051, PHY 2052, PHY 1061L/ 2061L
COM 1300
**Electrical Engineering (ELEN E1201 may be taken summer before entering or while at Columbia)
9. Engineering Mechanics
MAT 1412, MAT 1413, MAT 1510, MAT 2105, MAT 2601
PHY 1221, PHY 1222

10. Industrial Engineering, Engineering Management Systems, or Operations Research

MAT 1412, MAT 1413, MAT 1510, MAT 2105, MAT 2461, MAT 2462
COM 1300, COM 1320, COM 1504/MAT 1504
ACC 1001, ACC 1002

11. Materials Science and Engineering

MAT 1412, MAT 1413, MAT 1510, MAT 2601
PHY 2051, PHY 2052, PHY 1061L/ 2061L
CHE 1045, CHE 1046R/ CHE 1047L

12. Mechanical Engineering

MAT 1412, MAT 1413, MAT 1510, MAT 2105, MAT 2601

Choose one: PHY 2051 and PHY 2052 OR BIO 3038C OR both BIO 3521C BIO and 3207C
PHY 1221, PHY 1222

** Electrical Engineering (ELEN E1201 may be taken summer before entering or while at Columbia)

**There is no current YC course that meets this requirement. Students should meet with the Pre-Engineering Advisor to obtain direction from Columbia as to how and when these courses should be taken