Columbia University Pre-Engineering Requirements
(Last Revised: 10.30.2020)
Foundation Courses:
 MATH 151 Calculus I PHYS 120 Principles of Physics I
 MATH 152 Calculus II PHYS 130 Principles of Physics II
 MATH 251 Calculus III CSC 121 Computer Science I
 CHEM 130 Structure and Properties of Inorganic Molecules
 ECON 100 Introduction to Economics
 FYS Your choice
Major – Specific Coursework

Applied Mathematics or Applied Physics: Earth and Environmental Engineering:
 MATH 270 Linear Algebra
 MATH 363 Differential Equations MATH 363 Differential Equations
 PHYS 210 or 220 CHEM 120 Struc & Prop of Organic Mol
 BIO 145 Ecology and Evolution CHEM 260 Therm/Equil/Kinetics
 BIO 215 Cell and Genes PHYS 210/220
 BIO 215 Cell and Genes
Biomedical Engineering:
 PHYS 210/220 Electrical Engineering:
 CHEM 120 Struc & Prop of Organic Mol MATH 270 Linear Algebra
 MATH 363 Differential Equations
Chemical Engineering: PHYS 210/220
 MATH 363 Differential Equations PHYS 231 Statics & PHYS 351 Dynamics
 MATH 270 Linear Algebra
 CHEM 120 Struc & Prop of Organic Mol IEOR*:
 CHEM 260 Therm/Equil/Kinetics MATH 270 Linear Algebra
 MATH 247 Mathematical Statistics
Civil Engineering: MATH 441 Probability
 MATH 270 Linear Algebra CSC 122 Data Structures
 MATH 363 Differential Equations ECON 220 Financial Accounting

Computer Engineering: Materials Science and Engineering:
 MATH 270 Linear Algebra MATH 363 Differential Equations
 MATH 363 Differential Equations PHYS 210/220
 CHEM 120 Struc & Prop of Organic Mol
Computer Science:
 CSC 122 Data Structures Mechanical Engineering:
 MATH 123 Computational Discrete Math BIO 215 Cell and Genes
 BIO 145 Ecology and Evolution
 MATH 270 Linear Algebra
 MATH 363 Differential Equations
 PHYS 210/220
PHYS 231 Statics & PHYS 351 Dynamics

*IEOR – Industrial Engineering, Engineering Management Systems, or Operations Research