

PRE-ENGINEERING

Dual Degree Engineering Programs

Washington College is an affiliate of the Engineering dual degree programs at both Columbia University in New York and Washington University in St. Louis. These affiliations make it possible for qualified undergraduate students to earn baccalaureate degrees from both Washington College and the Engineering partner institution in as little as five years. A significant benefit of the program at Washington College is the opportunity for students with an interest in engineering to complete their pre-engineering course requirements in a liberal arts environment at a small college.

Students who complete the prerequisite courses specified by our Engineering partners and who also meet specified grade requirements receive guaranteed admission (Washington University) or priority in admission review (Columbia University). Students who complete the course requirements but do not meet the minimum grade point requirements are still eligible to apply to our partner institutions.

During the third year at Washington College students formally apply for transfer admission to an Engineering partner institution. A letter of recommendation from the Dual Degree Engineering Program Advisor at Washington College is necessary to assist qualified students applying for transfer admission. Other letters of recommendation may also be required depending on the program being pursued.

Students are strongly encouraged to discuss program requirements and to select coursework for each semester in consultation with the designated Program Advisor at Washington College. Additional information on these programs can be found on the websites of our partner institutions.

To declare an Engineering Dual Degree Program, students, in their third year, must submit a Major-Minor Declaration form, with their advisor's signature, and indicate on the form they are pursuing the Engineering dual degree program and submit the form to the Registrar's Office. The Registrar's Office will enter the Engineering Dual Degree Program on the student's record.

Students who complete the dual-degree prerequisite coursework but choose not to pursue a dual-degree program are well prepared to apply competitively to graduate engineering programs at other major universities beyond Columbia University and Washington University. This is an increasingly popular option for Washington College students pursuing careers in engineering. Students pursuing this alternative path graduate from Washington College with a B.S. or B.A. degree in their discipline and then join a university where they may earn an M.S., or an M.S. and PhD in an engineering discipline.

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3:2 B.S in Engineering Program with Columbia University in New York

Students in 3:2 programs typically attend WC for three academic years and the Engineering partner school for two years. Students earn a B.S. degree from WC with majors of Computer Science, Math or Physics and a B.S. degree in one of the Columbia University Engineering Majors (listed below).

- Applied Mathematics
- Applied Physics
- Biomedical Engineering
- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Earth & Environmental Engineering
- Electrical Engineering
- Engineering Management Systems
- Engineering Mechanics
- Industrial Engineering
- Materials Science and Engineering
- Mechanical Engineering
- Operations Research

Required WC Courses are Listed Below:

Code	Title	Credits	Notes
CHE 120 & CHE 122	Chem Principles Org Molecules with Lab and Chemical Principals Orgnc Molecules Lab	4	_____
ECN 112	Principles of Microeconomics	4	_____
FYS 101	First-Year Seminar	4	_____
MAT 111 or MAT 106 & MAT 107	Differential Calculus Stretch Differential Calculus I and Stretch Differential Calculus II	4-8	_____
MAT 112	Integral Calculus	4	_____
MAT 210	Multivariable Calculus	4	_____
MAT 310	Differential Equations	4	_____
PHY 111	General Physics I with Lab	4	_____
PHY 112	General Physics II with Lab	4	_____
PHY 252 or CSI 111	Scientific Modeling & Data Analysis Computer Science I	4	_____
W2 Writing Requirement		4	_____
W3 Writing Requirement		4	_____
Foreign Language ¹		4-8	_____
Humanities & Fine Arts Course ¹		4	_____
Humanities & Fine Arts Course ¹		4	_____
Humanities & Fine Arts Course ¹		4	_____
Social Science Course ¹		4	_____
Social Science Course ¹		4	_____
Social Science Course (satisfied by ECN 112 above) ¹			_____
Additional WC Major Courses			_____
Pre-Reqs for Engineering Major Courses ¹			_____

¹ Columbia University places special restrictions on distribution courses that satisfy their '27 non-technical credit hours' requirement. These non-technical credit hours include ECN 112 Principles of Microeconomics and FYS 101 First-Year Seminar. Examples of courses that satisfy this requirement can be found on their website <https://bulletin.engineering.Columbia.edu/b-elective-nontechnical-courses> (<https://catalog.washcoll.eduHTTPS://BULLETIN.ENGINEERING.COLUMBIA.EDU/B-ELECTIVE-NONTECHNICAL-COURSES/>). Please note that non-technical electives are subject to the review of Columbia University Undergraduate Admissions.

Commencement/Post Degree• **Columbia University Requirements**

1. Full-time at a regionally accredited institution for more than 3 years with cum GPA less than 3.30.
2. Pre-Engineering GPA greater than 3.30, as calculated by CU.
3. Minimum 3.0 GPA for each Engineering Science & Math course on first attempt
4. Completion of specific pre-requisites for Engineering Major on the pre-combined curriculum guide, by the end of Spring, in year applying.
5. Complete WC major & General Education requirements.

• **Washington College Requirements**

1. Graduates from WC at the end of 2 years at CU
2. Email Registrar April 1 for Inclusion in Commencement
3. Post Degree After Official CU Transcript Received w/ Degree Earned
4. SCE not required.

3:2 B.S. in Engineering Program with Washington University in St Louis, MO

Students earn a B.S. degree from WC with majors of Computer Science, Math or Physics and a B.S. degree in one of the Washington University Engineering Majors listed below:

- Biomedical Engineering
- Chemical Engineering
- Computer Engineering
- Electrical Engineering
- Environmental Engineering
- Mechanical Engineering
- Systems Engineering

REQUIRED WC COURSES ARE LISTED BELOW:

Code	Title	Credits	Notes
CHE 120 & CHE 122	Chem Principles Org Molecules with Lab and Chemical Principals Orgnc Molecules Lab	4	_____
FYS 101	First-Year Seminar	4	_____
MAT 111 or MAT 106 & MAT 107	Differential Calculus Stretch Differential Calculus I and Stretch Differential Calculus II	4-8	_____
MAT 112	Integral Calculus	4	_____
MAT 210	Multivariable Calculus	4	_____
MAT 280	Linear Algebra (strongly recommended)	4	_____
MAT 310	Differential Equations	4	_____
PHY 111	General Physics I with Lab	4	_____
PHY 112	General Physics II with Lab	4	_____
PHY 252 or CSI 111	Scientific Modeling & Data Analysis Computer Science I	4	_____
Foreign Language		4-8	_____
Humanities & Fine Arts Course ²		4	_____
Humanities & Fine Arts Course ²		4	_____
Humanities & Fine Arts Course ²		4	_____
Social Science Course		4	_____
Social Science Course		4	_____
Social Science Course		4	_____
W2 Writing Requirement		4	_____
W3 Writing Requirement		4	_____
Additional Courses for WC Major			_____
Pre-Engineering Pre-Req Courses			_____

² Washington University requires a minimum of six semester hours in Humanities. Note that Foreign Language courses count toward Humanities for Washington University.

Commencement/Post Degree

• Washington University Requirements

1. WC Dual Degree liaison certifies aptitude for engineering study and confirms student will complete undergrad non-engineering WC degree no later than Washington University Engineering Degree.
2. A cum GPA greater than 3.25.
3. GPA greater than 3.25 in science and math courses.
 - a. Applicants with lower GPAs are considered on a case-by-case basis; have your liaison officer write a letter of support.
4. English Language proficiency for non-native-English speakers.

• Washington College Requirements

1. Graduates from WC at the end of 2 years at WU
2. Email Registrar April 1 for Inclusion in Commencement

3. Post Degree After Official WU Transcript Received w/ Degree Earned
4. SCE not required.

3:3 M.S. in Engineering Program with Washington University in St. Louis, MO

The MS program provides an option to add a M.S. Engineering degree. Students earn a B.S. degree from WC with majors of Computer Science, Math or Physics, a B.S. degree in one of the Washington University Engineering Majors listed above (in the 3:2 B.S. in Engineering section above) and a M.S. degree in one of the Washington University engineering disciplines below.

- Aerospace Engineering
- Biomedical Engineering
- Computer Engineering
- Computer Science & Engineering
- Construction Management
- Cybersecurity Engineering
- Data Analytics & Statistics
- Electrical Engineering
- Energy, Environmental & Chemical Engineering
- Engineering Management
- Imaging Science
- Information Systems Management
- Materials Science
- Systems Science & Mathematics

REQUIRED WC COURSES ARE LISTED BELOW:

Code	Title	Credits	Notes
CHE 120 & CHE 122	Chem Principles Org Molecules with Lab and Chemical Principals Orgnc Molecules Lab	4	_____
FYS 101	First-Year Seminar	4	_____
MAT 111 or MAT 106 & MAT 107	Differential Calculus Stretch Differential Calculus I and Stretch Differential Calculus II	4-8	_____
MAT 112	Integral Calculus	4	_____
MAT 210	Multivariable Calculus	4	_____
MAT 280	Linear Algebra (strongly recommended)	4	_____
MAT 310	Differential Equations	4	_____
PHY 111	General Physics I with Lab	4	_____
PHY 112	General Physics II with Lab	4	_____
PHY 252 or CSI 111	Scientific Modeling & Data Analysis Computer Science I	4	_____
Foreign Language		4-8	_____
Humanities & Fine Arts Course ³		4	_____
Humanities & Fine Arts Course ³		4	_____
Humanities & Fine Arts Course ³		4	_____
Social Science Course		4	_____
Social Science Course		4	_____
Social Science Course		4	_____
W2 Writing Requirement		4	_____
W3 Writing Requirement		4	_____
WC Major Courses			_____
Pre-Req Courses for Engineering Major			_____

³ Washington University requires a minimum of six semester hours in Humanities. Note that Foreign Language courses count toward Humanities for Washington University.

Commencement/Post Degree

• Washington University Requirements

1. WC Dual Degree liaison certifies aptitude for engineering study and confirms student will complete undergrad non-engineering WC degree no later than Washington University Engineering Degree.
2. A cum GPA greater than 3.25.
3. GPA greater than 3.25 in science and math courses.
 - a. Applicants with lower GPAs are considered on a case-by-case basis; have your liaison officer write a letter of support.
4. English Language proficiency for non-native-English speakers.

• Washington College Requirements

1. Graduates from WC after an official transcript is received from Washington University with the M.S. degree posted.
2. Email Registrar April 1 for Inclusion in Commencement
3. SCE not required.

Major

- Computer Science Major (<https://catalog.washcoll.edu/catalog/departments-programs/mathematics-computer-science/computer-science-major/>)
- Mathematics Major (<https://catalog.washcoll.edu/catalog/departments-programs/mathematics-computer-science/mathematics-major/>)
- Physics Major (<https://catalog.washcoll.edu/catalog/departments-programs/physics/physics-major/>)