

FOUNDATION COURSES REQUIRED OF ALL MAJORS:

Columbia

Sacred Heart University

Mathematics			
MATH UN1101	Calculus I	MA 151	Calculus I, Part I
MATH UN1102	Calculus II	MA 152	Calculus I, Part II
MATH UN1201	Calculus III	MA 261	Linear Algebra
MATH UN1202	Calculus IV	MA 253	Calculus III
Physics			
PHYS UN1401	Introduction to Mechanics and Thermodynamics	PY 151	Principles of Physics I
PHYS UN1402	Introduction to Electricity, Magnetism, and Optics	PY 152	Principles of Physics II
Chemistry			
<i>Please see individual programs below for details. Some programs require an additional second semester of General Chemistry (C1404) or have possible substitutions.</i>			
CHEM UN1403	General Chemistry	CH 151	General Chemistry I w/lab
Lab Requirement			
<i>Either one-semester physics lab or one-semester chemistry lab is generally required. Please see individual programs below for more details</i>			
PHYS UN1493/4 or CHEM UN1500	Introduction to physics lab. General Chemistry Lab	PY 153 PY 154 CH 153	Principles of Physics I Lab Principles of Physics II Lab General Chemistry I Lab
Computer Science			
<i>Some majors require a specific programming language (see requirements for majors below).</i>			
COMS W1003 or COMS W1004 or COMS W1005 or COMS W1007	Introduction to Computer Science and Programming in C <i>ditto</i> in Java <i>ditto</i> in Matlab Object-Oriented Programming and Design in Java	CS 111 CS 112 NA NA	Introduction to Structured Programming Data Structures
Humanities and Social Sciences			
<i>Twenty seven (27) non-technical credit hours, including Principles of Economics and English Composition (see below).</i>		<i>In addition to the following two courses, seven (7) full credit courses in the Humanities and Arts and/or Social and Behavioral Sciences are required.</i>	
ECON UN1105	Principles of Economics	EC 101	Introduction to Economics
ENGL CC1010	University Writing	FYS 125	First-Year Seminar writing course

CHEMICAL ENGINEERING

Columbia

Sacred Heart University

Mathematics (choose one course listed below)			
MATH UN2030	Ordinary Differential Equations	MA 354	Differential Equations
APMA E2101	Introduction to Applied Mathematics – Ordinary Differential Equations & Linear Algebra <i>(Students who take an ODE course must also take a Linear Algebra course.)</i>	MA 354	Differential Equations
Physics			
PHYS UN1493/4	Physics Lab	PY 113 or 114	General Physics Laboratory
Chemistry (* may be taken before or during enrollment at Columbia)			
CHEM UN1404	General Chemistry II	CH 152	Introductory Chemistry II
CHEM UN1500	General Chemistry Lab	CH 154	Introductory Chemistry Laboratory
CHEM UN2443	Organic Chemistry I	CH 221	Organic Chemistry I
CHEM UN2943	Organic Chemistry Lab*	CH 223	Organic Chemistry I Laboratory

CIVIL ENGINEERING

Columbia

Sacred Heart University

Mathematics			
APMA E2101	Introduction to Applied Mathematics – Ordinary Differential Equations & Linear Algebra <i>(Students who take an ODE course must also take a Linear Algebra course.)</i>	MA 354	Differential Equations
Engineering Mechanics <i>(may be taken the summer before entering or while at Columbia)</i>			
ENME E3105	Mechanics	NA	
Computer Science			
<i>Introduction to Computer Science and Programming in MATLAB (COMS W1005) preferred</i> <i>Currently there is no Computer Science course at Sacred Heart that uses MATLAB.</i>			

ELECTRICAL ENGINEERING

Columbia

Sacred Heart University

Mathematics			
APMA E2101	Introduction to Applied Mathematics – Ordinary Differential Equations & Linear Algebra <i>(Students who take an ODE course must also take a Linear Algebra course.)</i>	MA 354	Differential Equations
Physics			
PHYS UN1403	Classical and Quantum Waves	PY 211	Classical and Quantum Waves
Computer Science			
<i>Knowledge of Computer Programming needed in order to take Data Structures in JAVA (W3134) or Data Structures in Algorithms (W3137) at Columbia.</i>			
<i>Sacred Heart equivalent is CS551, Introduction to object orientated programming in Java (course can be taken by advanced undergraduates)</i>			
Electrical Engineering <i>(may be taken the summer before entering or while at Columbia)</i>			
ELEN E1201	Introduction to Electrical Engineering	NA	

MATERIALS SCIENCE AND ENGINEERING

Columbia

Sacred Heart University

Mathematics (Linear Algebra not required)			
MATH UN1210	Ordinary Differential Equations	MA 354	Differential Equations
Physics			
PHYS UN1403	Classical and Quantum Waves	PY 211	Classical and Quantum Waves
Chemistry (choose one of the following)			
CHEM UN1403	General Chemistry I	CH 151	General Chemistry I
CHEM UN1401	General Chemistry II	CH 152	General Chemistry II

MECHANICAL ENGINEERING

Columbia

Sacred Heart University

Mathematics			
APMA E2101	Introduction to Applied Mathematics – Ordinary Differential Equations & Linear Algebra <i>(Students who take an ODE course must also take a Linear Algebra course.)</i>	MA 354	Differential Equations
Physics / Biology <i>(Choose one course listed below. Chemistry/Biology labs not required.)</i>			
PHYS UN1403	Classical and Quantum Waves	PY 211	Classical and Quantum Waves
EEEB W2001	Environmental Biology I: Molecules to Cells	BI 111	Concepts in Biology I
BIOL C2005	Introduction to Molecular and Cellular Biology	BI 111	Concepts in Biology 1
Physics / Chemistry Lab <i>(choose one course listed below)</i>			
PHYS C1493 or PHYS C1494 or CHEM C1500	Physics Lab I Physics Lab II General Chemistry Lab	PY 113 or PY 114 or CHEM 152	General Physics Laboratory I General Physics Laboratory II Introductory Chemistry Laboratory
Electrical Engineering / Engineering Mechanics <i>(may be taken the summer before entering or while at Columbia)</i>			
ELEN E1201 <i>or equivalent</i>	Introduction to Electrical Engineering	NA	
ENME E3105	Mechanics	NA	