

ELECTIVES: Engineering & Science electives

On the flowchart, there are four electives labeled: Advanced Science (ADV SCI) Elective, Engineering (ENG) Elective, Biochem (BIOCHEM) Elective, and Chemical Engineering (CHE) Elective. Each of these is restricted to a choice of at least 2 classes. Other courses may also be approved, but require a petition to the ChBE faculty. Undergraduate research and honors internships/co-op fit under the courses designated “independent study”. Up to 6 hours of independent study courses can be applied towards the B.S. degree in Chemical Engineering.

Chemical and Biological Engineering Department Approved List of Advanced Science Electives, Biochem Electives and Chemical Engineering Electives.

ChBE students must satisfy the 3 hours of Advanced Science, 3 hours of Engineering, 3 hours Biochem **AND** 3 hours Chemical Engineering electives by completing one of the following courses for each elective. A course may be used as an elective if it appears on the approved list which is current at the time the course is taken. One course cannot count in more than one place on the curriculum flowchart. Note: If you take a class that can fit into more than one elective slot, DegreeWorks will place it in one of the empty slots, and when you take additional electives, DegreeWorks will shift the classes so hours are optimized towards the degree.

Advanced Science (ADV SCI) Electives are:

BSC 300 ^d	Cell Biology	3 hrs.
BSC 310 ^d	Microbiology (w/ permission)	3 hrs.
BSC 315 ^d	Genetics	3 hrs.
BSC 385 ^d	General Ecology	3 hrs.
BSC 442 ^d	Genomics (see instructor about waiving pre-reqs)	3 hrs.
BSC 450 ^d	Fundamentals of Biochemistry	3 hrs.
MS 448	Introduction to Oceanography	4 hrs.
BSC 398, 399	Biology Research (Independent Study with Advisor)	variable hrs.
CH 223	Chemical Equilibria & Analyses	4 hrs.
CH 340	Physical Chemistry for Non-ACS	3 hrs.
CH 341	Physical Chemistry I	3 hrs.
CH 396, 398, 399	Chemistry Research (Independent Study with Advisor)	variable hrs.
CH 405	Medicinal Chemistry	3 hrs.
CH 461 ^c	Biochemistry I	3 hrs.
CH 462	Biochemistry II	3 hrs.
CH 424	Instrumental Analysis	4 hrs.
CH 497, 498, 499	Chemistry Research (Independent Study with Advisor)	variable hrs.
CE 470	Water Resources in the European Alps (study abroad)	4 hrs.
CHE 325	ChE Honors Forum	1 hr.
CHE 412 or 512 ^a	Polymer Materials Engineering	3 hrs.
CHE 418 or 518 ^a	Tissue Engineering	3 hrs.
CHE 438 or 538 ^a	Integrated Circuit Fabrication Principles	3 hrs.
CHE 445 or 545 ^a	Introduction to Biochemical Engineering	3 hrs.
CHE 491,492 ^e	Special Problems (requires pre-approval)	variable hrs.
CHE 498 ^e	Honors Special problems (requires pre-approval)	variable hrs.
PH 495, 496 ^e	Physics Research (Independent Study with Advisor)	variable hrs.
Other UG Research	May be acceptable if in a technical subject.	

Engineering (ENG) Electives are:

ECE 320	Fundamentals of Electrical Engineering	3 hrs.
MTE 271	Engineering Materials	3 hrs.

Chemical Engineering (CHE) Electives are:

CHE 412 or 512 ^a	Polymer Materials Engineering	3 hrs.
CHE 418 or 518 ^a	Tissue Engineering	3 hrs.
CHE 438 or 538 ^a	Integrated Circuit Fabrication Principles	3 hrs.
CHE 440 ^b or 540 ^{a,b}	Health and Safety	3 hrs.
CHE 445 or 545 ^a	Introduction to Biochemical Engineering	3 hrs.
CHE 491/492 ^e	Special Problems (requires pre-approval)	3 hrs.
CHE 498/499 ^e	Honors Special Problems (requires pre-approval)	3 hrs.
CHE 525 ^a	Polymer Processing and Rheology	3 hrs.

Biochem (BIO) Electives are:

CH 461 ^c	Biochemistry I	3 hrs.
CHE 445	Intro to Biochemical Engineering	3 hrs.
CHE 545 ^a	Intro to Biochemical Engineering	3 hrs.

^aAdvanced Undergraduate/Entry-Level Graduate Course: Undergraduates must have senior status (91+hours) and a grade point average of 3.0 or better to be eligible for 500-level courses. Consult the course instructor for advice regarding this option.

^bCHE 440/540 is a required course in the 2013 ChE curriculum and will not count as an elective.

^cAn override is possible to take CH 461 without the pre-requisite CH 223. See your advisor.

^dOverrides can be given for ChBE students to take 300+-level BSC classes with only BSC 114 as a pre-req.

^eCHE 491/492/498/499 Independent study classes require approval and clearance. Contact the professor overseeing your independent study and the departmental office to remove the registration block on these classes.
