

BS Chemical Engineering/MS Bioengineering (thesis/non-thesis options) [153 hrs]

The following plan contains all the general education, foundational engineering and core chemical engineering requirements for your BS Chemical Engineering degree (129 credit hours), and the additional requirements for the MS Bioengineering degree (30 hrs). Up to 6 hours of graduate classes (taken in the 4th year) will count to fulfill your CHE undergraduate elective requirements. See additional general education requirements (POLS, HIST) below the table, which have more flexibility in terms of which semester you can take them in. Always be sure to consult with the academic advisor about completion of all degree plan requirements.

First Year (Foundational Engineering Core)	
Fall Semester (15 hrs)	Spring Semester (17 hrs)
ENGR-1110 Engineering Seminar	ENGR-1320 or 1340 Bio-inspired Des. or Intro. Engineering Design
ENGR-1330 Comp Thinking/Data Sci	ENGR-2392 Engineering Ethics
MATH-1451 Calculus I	MATH-1452 Calculus II
CHEM-1307/1107 Principles of Chemistry I	PHYS-1408 Principles of Physics I
ENGL-1301 Essentials of College Rhetoric	ENGL-1302 Advanced College Rhetoric
Second Year	
Fall Semester (15 hrs)	Spring Semester (16 hrs)
CHE-2310 Intro. Chemical Processes	CHE-2321 Chemical Engineering Thermodynamics I
MATH-2450 Calculus III	CHE-3315 Fluid Mechanics
CHEM-1308/1108 Principles of Chemistry II	CHE-2306 Exposition of Technical Information
PHYS-2401 Principles of Physics II	MATH-3350 Advanced Math for Engineers I
	CHEM-3305/3105 Organic Chemistry I
Third Year	
Fall Semester (16 hrs)	Spring Semester (14 hrs)
CHE-3322 Chemical Engineering Thermodynamics II	CHE-3323 Chemical Reaction Engineering
CHE-3326 Heat Transfer	CHE-3341 Mass Transfer Operations
CHE-3305 Computations/Simulations in Chem Eng.	CHE-3232 Transport Lab
CHE-4372 Engineering Experimentation	CHE-3330 Engineering Material Science
CHEM-43xx/41xx Chemistry Elective	IE-2324 Engineering Economic Analysis
Fourth Year	
Fall Semester (13 hrs)	Spring Semester (11 hrs)
CHE-4353 Process Control	CHE-4356 Process Safety
CHE-4232 Unit Operations Lab	CHE-4202 Design II
CHE-4201 Design I	BIOE core/CHE elective (e.g., CHE-5385*, CHE-5365*)
BIOE core/CHE elective (e.g., CHE-5363*)	BIOE elective (5000-level, e.g. CHE-5000 Research**)
CHEM-43xx Chemistry Elective	
Fifth year	
Fall Semester (12 hrs)	Spring Semester (9 hrs)
MATH core (e.g. CHE-5310*)	BIOE elective (5000-level)
BIOE core (5000-level)	BIOE elective (5000-level)
BIOE elective (5000-level)	CHE-6000 Master's Thesis (3hrs)***
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NOTES:

- General education requirements (15hrs) include: POLS-1301, POLS 2306, HIST-2300, HIST-3xxx, Creative Arts Elective (3hrs)
- The courses in bold are all the core Chemical Engineering courses that are only guaranteed to be offered in the semesters shown.
- The description for each course can be found by typing the course code into the search box on the main TTU catalog here: <https://catalog.ttu.edu/>
- Graduate-level requirements for MS Bioengineering (with thesis): 3 hrs Math, 9 hrs BIOE, 12 hrs Elective, 6 hrs Thesis***
- Graduate-level requirements for MS Bioengineering (non-thesis): 3 hrs Math, 9 hrs BIOE, 15 hrs Elective, 3 hrs Research
- *Courses indicated here are recommended options for Chemical Engineering students, to ensure those courses count toward both the BS and MS degree plans. However, students are free to select other courses to fulfill the BIOE core requirements. There are lots of options to complete both the core and elective requirements for the MS Bioengineering degree, including several non-engineering courses. Some of these options are listed here: <https://www.depts.ttu.edu/coe/bioengineering/program.php>, and several courses are offered during the summer terms. You must seek approval from the academic advisor for the MS Bioengineering program before registering for classes.
- ** Students taking the thesis option have the option to take CHE-5000 (research) in lieu of a lecture-based elective. It is recommended to take that course in the spring semester of the fourth year.
- *** Students taking the non-thesis option will take an additional elective instead of CHE-6000 in fall, and a report course in spring.