

BIOCHEMISTRY 3+2 PLAN, JOINT BACHELOR OF SCIENCE/MASTER OF SCIENCE

Biochemistry 3+2 Plan (BS/MS)

A feature of the Biochemistry MS program is the 3+2 plan. This plan gives qualified undergraduate students the opportunity to simultaneously pursue both the Baccalaureate (BS) and Master of Science (MS) degrees. Talented students are thus quickly moved toward expanding their academic and scientific horizons based on individual student's abilities and motivation.

Specific requirements for the 3+2 program are included in the Biochemistry MS description of the College of Science, Technology, Engineering, and Mathematics, undergraduate programs section of this catalog. Students are encouraged to enter the program as early as the fall of the junior year but not later than the fall of the senior year.

Specific Admission Requirements

Students in the 3+2 program are expected to successfully complete the requirements for both the BS and MS degree in five academic years. This is shorter than the typical six years that are necessary to complete BS and MS programs independently. Students must apply to the 3+2 program during the Spring semester of their junior year or the Fall semester of their senior year and meet the course requirements listed below. Students applying to the 3+2 program must have a minimum 3.0 overall GPA and a minimum 3.25 GPA in their chemistry courses.

The application file for admission to the Biochemistry MS 3+2 plan must include:

1. A completed Biochemistry MS application form;
2. A personal statement;
3. A CSU-Pueblo transcript;
4. Three letters of recommendation from CSU-Pueblo faculty; and
5. Combined GRE scores above 300 (students may be admitted into the 3+2 program before taking the GRE; however, they must submit satisfactory GRE scores by the last day of finals at the end of their first semester in the 3+2 Biochemistry MS program to remain in the program).

Specific Program Requirements

Students in the 3+2 BS/MS program must complete:

- The requirements for a BS in Biochemistry.
- The requirements for the MS in Biochemistry including thesis or non-thesis options.

It is expected that students take any 400/500 level courses at the 500 level once they are enrolled in the 3+2 program plan.

The 3+2 degree plan has the following requirements:

Course	Title	Credits
General Education		24
BS Chemistry Core		42
BS Biochemistry Concentration		54
MS Biochemistry		30-32
Total Credits		150-152

Undergraduate Requirements Specific Core Requirements

Course	Title	Credits
CHEM 121 & 121L	General Chemistry I (GT-SC2) and General Chemistry Lab I (GT-SC1)	5
CHEM 122 & 122L	General Chemistry II (GT-SC2) and General Chemistry Lab II (GT-SC1)	5
CHEM 170	Academic Orientation	0.5
CHEM 301 & 301L	Organic Chemistry I and Organic Chemistry Lab I	5
CHEM 302 & 302L	Organic Chemistry II and Organic Chemistry Lab II	5
CHEM 317 & 317L	Quantitative Analysis and Quantitative Analysis Lab	5
CHEM 321	Physical Chemistry I	3
CHEM 322	Physical Chemistry II	3
CHEM 370	Academic Enrichment	0.5
CHEM 419 & 419L	Instrumental Analysis and Instrumental Analysis Lab	5
CHEM 420 & 420L	Inorganic Chemistry and Inorganic Chemistry Lab	4
CHEM 493	Seminar	1
Total Credits		42

Specific Concentration Requirements

Course	Title	Credits
CHEM 411	Biochemistry I	3
CHEM 412 & 412L	Biochemistry II and Biochemistry II Lab	5
Electives		3
CHEM 492	Research	1-3
CHEM 495	Independent Study	1-7
Other Required Courses		
BIOL 181 & 181L	College Biology I/Organismal Bio (GT-SC2) and College Biology I/Organismal Bio Lab (GT-SC1)	4
BIOL 182 & 182L	College Biology II/Cellular Biology (GT-SC2) and College Biology II/Cellular Bio Lab (GT-SC1)	4
BIOL 301 & 301L	General Microbiology and General Microbiology Lab	5
BIOL 350	Mendelian and Population Genetics	2
BIOL 351 & 351L	Molecular Biology and Genetics and Molecular Biology & Genetics Laboratory	4
BIOL 412 & 412L	Cellular Biology and Cellular Biology Lab	4
MATH 126	Calculus & Analytic Geometry I (GT-MA1)	5
MATH 224	Calculus and Analytic Geometry II	5
PHYS 221 & 221L	General Physics I and General Physics I Lab	5

PHYS 222 & 222L	General Physics II and General Physics II Lab (GT-SC1)	5
Total Credits		54

Graduate Requirements

The course of study requires five semester credits of course work common to all students. Each student must complete three of the five core courses (9 credit hours). Students are required to complete 10-12 additional credit hours of approved graduate level electives in Chemistry, Biology, Math, or Engineering as outlined in the graduation plan developed with the student's advisor and graduate committee, and approved by the Program Director. The signed graduation plan may be completed at any time, but is a requirement for successful completion of CHEM 510 Seminar (3 c.h.).

Thesis option students are required to defend their research results before their graduate committee. Non-thesis option students must take a written comprehensive examination over courses taken in their program of study. A non-thesis option student must submit a formal written report based on an internship and defend their internship and work before their graduate committee.

Each student must pass qualifying exams in three of five areas of selected chemistry content (analytical, biological, inorganic, organic, or physical chemistry). Students will have two opportunities to pass each area exam. Qualifier examinations are scheduled during the week preceding the beginning of classes each term or in consultation with the program director or department chair. If an examination is failed, the requirement may be satisfied by completing the designated undergraduate coursework in the appropriate subdiscipline, as specified by the program director or department chair, with a minimum grade of "B". Students enrolling into the 3+2 program will be exempt from the requirement to pass qualifying exams if they have completed courses at CSU Pueblo in analytical, biological, inorganic, organic, or physical chemistry with a grade of "B" or better. Students enrolled in the 3+2 program required to pass qualifying exams will schedule the exams in consultation with the Program Director.

Course	Title	Credits
Select three of the following:		
CHEM 501	Advanced Organic Chemistry	3
CHEM 511	Biochemistry I	3
	or CHEM 512 Biochemistry II	
CHEM 521	Advanced Inorganic Chemistry	3
CHEM 529	Advanced Analytical Chemistry	3
CHEM 531	Advanced Physical Chemistry	3
Total Credits		9

Plan A (Thesis Option)

Course	Title	Credits
Thesis Option Courses		
CHEM 510	Foundations in Graduate Studies	3
CHEM 589	Thesis Defense	1
CHEM 593	Seminar	1
CHEM 599	Thesis Research	6
Electives		10
Total Credits		21

Plan B (Non-Thesis Option)

Course	Title	Credits
Non-Thesis Option Courses		
CHEM 510	Foundations in Graduate Studies	3
CHEM 588	Internship Defense	1
CHEM 593	Seminar	1
CHEM 598	Internship	4
Electives		14
Total Credits		23

Electives

Elective courses may be selected from the following or others may be added with permission of the Graduate Committee.

Course	Title	Credits
CHEM 501 & 501L	Advanced Organic Chemistry and Advanced Organic Chemistry Lab	5
CHEM 503	Polymer Chemistry	3
CHEM 511	Biochemistry I	3
CHEM 512 & 512L	Biochemistry II and Biochemistry II Lab	5
CHEM 519 & 519L	Instrumental Analysis and Instrumental Analysis Lab	5
CHEM 521	Advanced Inorganic Chemistry	3
CHEM 525	Environmental Chemistry	3
CHEM 529	Advanced Analytical Chemistry	3
CHEM 531	Advanced Physical Chemistry	3
CHEM 550	Industrial Chemistry	2
CHEM 591	Special Topics	1-4
CHEM 592	Research	1-6
CHEM 595	Independent Study	1-4