Biochemistry and Neuroscience Ph.D.

Program Requirements

Catalog Department Overview # (https://catalog.uaf.edu/academic-departments/chemistry-biochemistry/)

Minimum Requirements for Biochemistry and Neuroscience Ph.D. (including core courses): 38 credits

Concentrations: Biochemistry (p. 1), Neuroscience (p. 1)

		Credits
General University Requirements		
Complete the graduate general university requirements. (https://catalog.uaf.edu/phd/#gurphdtext)		
Ph.D. Degree Requirements		
Complete the Ph.D. degree requirements. (https://catalog.uaf.edu/phd/#phdrequirementstext)		
As part of the Ph.D. requirements, complete the following:		
CHEM F699	Thesis	18
Complete Ph.D. dissertation		
Biochemistry and Neuroscience Program Requirements		
Complete 9 additional credits of coursework at the F400 or F600 level, as approved by the graduate committee, with at most two courses at the F400 level.		9
Complete seminar series CHEM F688 at least twice.		2
CHEM F688	Biochemistry Colloquium	
Concentration		
Complete one of the following:		9
Biochemistry		
Neuroscience		
Total Credits		**38**

Concentrations
Biochemistry

		Credits
Biochemistry Concentration Requirements		
Complete three of the following:		9
CHEM F654	Protein Structure and Function	
CHEM F657	Molecular Foundations of Gene Expression	
CHEM F670	Cellular and Molecular Neuroscience	
CHEM F674	Membrane Biochemistry and Biophysics	
CHEM F675	Cellular Signaling	
Total Credits		**9**

Neuroscience

		Credits
Neuroscience Concentration Requirements		
Complete the following:		
CHEM F670	Cellular and Molecular Neuroscience	3
CHEM F676	Neurochemistry	3
Complete one of the following:		3
CHEM F654	Protein Structure and Function	
CHEM F657	Molecular Foundations of Gene Expression	
CHEM F674	Membrane Biochemistry and Biophysics	
CHEM F675	Cellular Signaling	
Total Credits		**9**

Admission Requirements

Catalog Department Overview # (https://catalog.uaf.edu/academic-departments/chemistry-biochemistry/)

Admission Requirements

Complete the following general university admission requirements for graduate programs (https://catalog.uaf.edu/getting-started/admission/#graduatedegreetext).

1. Submit an application for admission
2. Submit official transcripts
3. Official test results: GRE scores are not required for this program, but may be considered if submitted
4. Submit resume/curriculum vitae
5. Submit statement of academic goals
6. Submit 3 letters of recommendation

International Students: Please consult UAF's most recent application requirements regarding English language proficiency (https://catalog.uaf.edu/getting-started/admission/#english).

Additional program admission requirements and information

- A bachelor's degree in chemistry, biochemistry or a related field from an accredited, government-recognized university
- Transcripts from all universities or colleges attended: Unofficial transcripts may be submitted with the application. Official transcripts must follow prior to matriculation.
- Curriculum vitae or resume: A summary of education and work history including additional skills, certifications, and accomplishments.
- Statement of Academic Goals: A letter (no more than three pages) explaining why you want to be admitted into our program and how your academic and career goals are related to attending our institution. Mentioning specific faculty you would like to work with is highly encouraged.
- Letters of Recommendation:
  - Letters should be from individuals who can address your potential to succeed in graduate school

- Ideally, letters of reference should come from university faculty, research staff, or professionals familiar with your academic and research achievements and also with the expectations of graduate school
- References are asked to address writing ability, critical thinking skills, quantitative skills, and potential to succeed in a graduate program

- **Note:** Students are typically not admitted to the program unless a faculty advisor has agreed to serve as the mentor. Applicants should contact potential advisors before applying.

Roadmaps

Catalog Department Overview # (https://catalog.uaf.edu/academic-departments/chemistry-biochemistry/)

Roadmaps provide suggested semester-by-semester study plans for programs and are based on full-time enrollment, unless otherwise specified.

- This roadmap should be used in conjunction with regular academic advising sessions. All students are encouraged to meet with their advisor or mentor each semester.
- Certain courses and milestones must be completed in the specified semester to ensure on-time graduation.
- Transfer credits may affect the roadmap.
- Requirements, course availability, and sequencing may change.
- Courses marked with (*) are recommended.

Biochemistry Concentration

First Year

Fall	Credits Spring	Credits
CHEM F654, F657, F670, F674, or F675[22]	3 CHEM F654, F657, F670, F674, or F675[22]	3
CHEM F688[20]	1 CHEM F699[18]	3
CHEM F699[18]	3 Program Elective	3
	7	**9**

Second Year

Fall	Credits Spring	Credits
CHEM F688[20]	1 CHEM F654, F657, F670, F674, or F675[22]	3
CHEM F699[18]	3 CHEM F699[18]	3
Program Elective	3 Program Elective	3
	7	**9**

Third Year

Fall	Credits Spring	Credits
CHEM F699[18]	3 CHEM F699[18]	3
	3	**3**

Total Credits 38

Footnote Definitions

General Education Requirements	Degree Requirements	Program & Other Requirements
1—Communication	8—Alaska Native-themed	20—Program Requirement
2—Arts	9—Communication	21—Capstone Requirement
3—Humanities	10—Computation	22—Concentration Course
4—Social Sciences	11—Ethics	23—General Elective
5—Additional Arts, Humanities or Social Sciences	12—Humanities	24—Minor Course
6—Mathematics	13—Human Relations	25—Upper Division
7—Natural Sciences	14—Humanities or Social Sciences	26—Program Elective
	15—Library & Information Research	
	16—Mathematics	
	17—Natural Sciences	
	18—Other	
	19—Social Sciences	

Neuroscience Concentration

First Year

Fall	Credits Spring	Credits
CHEM F654, F657, F674, or F675[22]	3 CHEM F670[22]	3
CHEM F688[20]	1 CHEM F699[18]	3
CHEM F699[18]	3 Program Elective	3
	7	**9**

Second Year

Fall	Credits Spring	Credits
CHEM F676[22]	3 CHEM F699[18]	3
CHEM F688[20]	1 Program Elective	3
CHEM F699[18]	3 Program Elective	3
	7	**9**

Third Year

Fall	Credits Spring	Credits
CHEM F699[18]	3 CHEM F699[18]	3
	3	**3**

Total Credits 38

Learning Outcomes

Catalog Department Overview # (https://catalog.uaf.edu/academic-departments/chemistry-biochemistry/)

Learning Outcomes are specific, measurable statements that define the knowledge and skills students will gain by the end of the program.

Graduates of this program will be able to:

- Demonstrate strong written communication skills to communicate significance and innovation as well as technical details of biochemistry and neuroscience research
- Formulate hypotheses and articulate methods for testing hypotheses, and perform technical tasks and quantitative analyses needed to test hypotheses and interpret results
- Demonstrate general and specific knowledge of field and peer-reviewed literature and be able to critically analyze literature
- Demonstrate strong presentation skills
- Demonstrate strong professional skills