The Department of Biochemistry offers an M.S. degree only to students already enrolled in the Ph.D. program. Students should contact the Graduate Studies adviser for more details.

Those applying for graduate study should have at least a baccalaureate degree and should have completed work in cell and developmental biology, basic biochemistry and molecular biology, and genetics. Also required are: at least one year of university physics; differential and integral calculus; and organic, inorganic, and physical chemistry. The department is especially interested in those applicants who have research experience in biology or chemistry. Students must submit an application, including transcripts and letters of recommendation, by December for admission in the following Autumn Quarter.

Applications should be submitted at the Office of Graduate Admissions (http://gradadmissions.stanford.edu) web site. Applicants are notified by March 31 of decisions on their applications. The Biochemistry Department has made scores from the general Graduate Record Examination (GRE) (verbal, quantitative, and analytical) optional on our application.

All applicants are urged to compete for non-Stanford fellowships or scholarships, and U.S. citizens should complete an application for a National Science Foundation Predoctoral Traineeship. Students are provided with financial support to cover normal living expenses; Stanford tuition costs are paid. Applicants for admission to the department are considered without regard to race, color, creed, religion, sex, age, national origin, or marital status.

Postdoctoral research training is available to graduates who hold a Ph.D. or an M.D. degree. Qualified individuals may write to individual faculty members for further information.

The Department of Biochemistry focuses on the molecular basis of life, by studying the structures and functions of proteins and nucleic acids, the control of development, molecular motors and the cytoskeleton, trafficking of proteins between organelles, regulation of gene expression, protein homeostasis, structure and design, genetic and epigenetic control of chromosome function, and the application of genomics, all towards the understanding of health and disease.

COVID-19 Policy Changes to Degree Requirements

On this page: Winter Quarter (p. 1) • Spring Quarter (p. 2) • Doctoral Programs (p. 2) (if applicable)

For a complete overview of academic policy changes related to the COVID-19 pandemic, see the "COVID-19 and Academic Continuity (http://exploredegrees.stanford.edu/covid-19-policy-changes)" section of this bulletin.

In response to the COVID-19 pandemic in 2020, Stanford University made a number of emergency changes to policies and procedures that impacted Winter and Spring quarters 2019-20. Those changes, as they relate to degree programs, are compiled on this page. These changes reflect the disruption that students and instructors experienced when the University transitioned to online learning on March 9, 2020, in addition to the disruption to the Stanford community caused by the pandemic itself.

Winter Quarter 2019-20

• University-wide Winter Quarter Academic Changes (http://exploredegrees.stanford.edu/covid-19-policy-changes/#winterquarteracademicchanges)

The Committee on Undergraduate Standards and Policy (C-USP) and the Committee on Graduate Studies (C-GS) approved an exception for Winter Quarter 2019-20 to permit students to request late class withdrawals

Doctor of Philosophy in Biochemistry

Requirements for the M.S. and Ph.D. degrees are described in the "Graduate Degrees (http://exploredegrees.stanford.edu/graduatedegrees)" section of this bulletin. The department does not offer undergraduate degrees.

The Department of Biochemistry offers a Ph.D. program which begins in the Autumn Quarter of each year. The program of study is designed to prepare students for productive careers in biochemistry; its emphasis is training in research, and each student works closely with members of the faculty. In addition to the requirement for a Ph.D. dissertation based on original research, students are required to complete six advanced courses in biochemistry and related areas among the 135 total units required for the Ph.D. Selection of these courses is tailored to fit the background and interests of each student. A second requirement involves the submission of two research proposals which are presented by the student to a small committee of departmental faculty members who are also responsible for monitoring the progress of student curricular and research programs, and a journal club presentation. All Ph.D. students are expected to participate actively in the department’s seminar program, and students are encouraged to attend and to present papers at regional and national meetings in cellular biochemistry and molecular biology. Teaching experience is an integral part of the Ph.D. curriculum and is required for the degree.

COVID-19-Related Degree Requirement Changes

For information on how Biochemistry degree requirements have been affected by the pandemic, see the "COVID-19 Policies tab (p. 1)" in this section of this bulletin. For University-wide policy changes related to the pandemic, see the "COVID-19 and Academic Continuity (http://exploredegrees.stanford.edu/covid-19-policy-changes)" section of this bulletin.

Courses offered by the Department of Biochemistry are listed under the subject code BIOC on the Stanford Bulletin’s ExploreCourses web site.

Biochemistry is a department within the School of Medicine, with offices and labs located in the Beckman Center for Molecular and Genetic Medicine at the Stanford Medical Center, the Shriram Center for Bioengineering and Chemical Engineering, and the Stanford Genome Technology Center. Courses offered by the department may be taken by undergraduates as well as graduate and medical school students.

Advanced courses offered in more specialized areas emphasize recent developments in biochemistry, cell biology, and molecular biology. These courses include the physical and chemical principles of biochemistry, enzyme reaction mechanisms, membrane trafficking and biochemistry, molecular motors and the cytoskeleton, mechanisms and regulation of nucleic acid replication and recombination, the biochemistry of bacterial and animal viruses, the molecular basis of morphogenesis, the molecular and cell biology of yeast, and the structure and function of both eukaryotic and prokaryotic chromosomes.

Opportunities exist for directed reading and research in biochemistry and molecular biology, using the most advanced research facilities, including those for light and electron microscopy, chromatography and electrophoresis, protein and nucleic acid purification, rapid kinetic analysis, synthesis and analysis, single molecule analyses using laser light traps, microarray generation and analysis, and computer graphic workstation facilities for protein and nucleic acid structural analysis. Ongoing research uses a variety of organisms from bacteria to animal cells.
and/or changes to class grading basis to CR/NC (for those classes that had CR/NC as an option).

**Graduate Degree Requirements**

**Grading Requirements**
The Department of Biochemistry counts any Winter Quarter 2019-20 class in which the student received a final grade of 'CR' towards graduate degree requirements that otherwise require a letter grade.

**Other Requirements**
If a student has difficulty completing a graduate degree requirement due to the COVID-19 pandemic, (e.g., a study abroad requirement, a laboratory research requirement), the student should consult with the Student Services Officer to identify academic options to fulfill degree requirements.

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**Spring Quarter 2019-20**

- University-wide Spring Quarter Academic Changes (http://exploredegrees.stanford.edu/covid-19-policy-changes/#winterquarteracademicchangestext)

The Faculty Senate approved a policy requiring that all undergraduate and graduate classes in Spring Quarter 2019-20 be offered only on the 'S/NC' (Satisfactory/No Credit) grading basis.

**Graduate Degree Requirements**

**Grading Requirements**
The Department of Biochemistry counts any Spring Quarter 2019-20 class in which the student received a final grade of 'S' towards graduate degree requirements that otherwise require a letter grade.

**Other Requirements**
If a student has difficulty completing a graduate degree requirement due to the COVID-19 pandemic, (e.g., a study abroad requirement, a laboratory research requirement), the student should consult with the Student Services Officer or Director of Graduate Studies to identify academic options to fulfill degree requirements.

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**Doctoral Programs**
The Faculty Senate confirmed that doctoral programs have discretion to delay candidacy decisions through the end of Autumn Quarter 2020-21. It also confirmed that students have the option to defer the candidacy process (e.g., qualifying exams) to Autumn Quarter 2020-21 without penalty.

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**Graduate Advising Expectations**
The Department of Biochemistry is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (http://exploredegrees.stanford.edu/graduategdegrees/#advisingandcredentialstext)" section of this bulletin.


Chair: Aaron F. Straight

Director of Graduate Studies: Daniel Herschlag

Professors: Steven Artandi, Gilbert Chu, Ronald W. Davis, James E. Ferrell, Jr., Daniel Herschlag, Peter Kim, Mark A. Krasnow, Suzanne R. Pfeffer, James A. Spudich, Aaron F. Straight

Associate Professors: Rhiju Das, Pehr A. B. Harbury, Rajat Rohatgi

Assistant Professors: Onn Brandman, Silvana Konermann, Lingyin Li, Julia Salzman, Ellen Yeh

Courtesy Professors: Chaitan S. Khosla, Sharon Long