Ph.D. in Biochemistry & Biophysics; Microbiology; or Molecular, Cellular, & Developmental Biology

Molecular Biosciences Doctoral Programs

Molecular Biosciences is an interdisciplinary group of faculty, postdoctoral fellows and graduate students who perform cutting-edge research across a wide range of areas (http://molecularbiosciences.ku.edu/research), including biochemistry, biophysics, structural biology, bioinformatics, cancer biology, genetics, genomics, immunology, microbiology, virology, neurobiology, molecular, cellular, and developmental biology. Our researchers investigate fundamental biological and biomedical problems on all levels, from molecules to cells to organisms. Our research labs collaborate to solve complex questions using a range of approaches, and make use of the world-class core facilities at KU. The Department of Molecular Biosciences at the University of Kansas is an excellent environment for research and graduate training in biology.

The department offers Doctor of Philosophy degrees in Biochemistry and Biophysics (http://molecularbiosciences.ku.edu/biochemistry-graduate-program), in Molecular, Cellular, and Developmental Biology (MCDB (http://molecularbiosciences.ku.edu/mcdb-graduate-program)), and in Microbiology (http://molecularbiosciences.ku.edu/microbiology-0). General information about the department, our faculty and students, and alumni of our graduate programs can be found on our website (http://molecularbiosciences.ku.edu). Detailed information about the graduate program, curricula (http://molecularbiosciences.ku.edu/Ph.D.-Overview), and financial support (http://molecularbiosciences.ku.edu/MBGraduateProgramFAQs) is also available.

Note that the various B.A. and B.S. undergraduate degree programs in biology are listed at the Biology Undergraduate Programs (http://catalog.ku.edu/liberal-arts-sciences/biology) page.

Admission to Graduate Studies

An applicant seeking to pursue graduate study in the College may be admitted as either a degree-seeking or non-degree seeking student. Policies and procedures of Graduate Studies govern the process of Graduate admission. These may be found in the Graduate Studies (http://catalog.ku.edu/graduate-studies) section of the online catalog.

Please consult the Departments & Programs (http://catalog.ku.edu/liberal-arts-sciences) section of the online catalog for information regarding program-specific admissions criteria and requirements. Special admissions requirements pertain to Interdisciplinary Studies degrees, which may be found in the Graduate Studies section of the online catalog.

Graduate Admission

The Department of Molecular Biosciences (http://molecularbiosciences.ku.edu) recognizes the importance of investing in the careers of future biomedical scientists. We welcome graduate students into our vibrant scientific community, where they have the opportunity to become outstanding researchers and prepare for an exciting future in science.

All students seeking a graduate degree must submit a formal application to the Molecular Biosciences graduate program. Full information on the application process, and a link to apply online can be found on our website (http://molecularbiosciences.ku.edu/admissions). Application materials for the Molecular Biosciences graduate program include:

1. An application form and fee;
2. 1 official copy of all academic transcripts (international students must also provide a translated copy);
3. A CV or résumé (1 to 2 pages);
4. Official Graduate Record Examination (GRE) scores - General Exam;
5. 3 letters of recommendation;
6. A description of your research interests and professional goals (1 to 2 pages); and
7. International applicants are required to have a Minimum iBT SPEAKING score of 22 AND all parts scores at least 20; or IELTS SPEAKING score of 8. Scores should be no older than 2 years.

Applications should be received by December 15 are reviewed by the Molecular Biosciences Graduate Admissions Committee. Applications are evaluated based on several criteria, including GPA, GRE scores, strength of recommendation letters, previous research experience, and the fit of the applicant's career goals with our educational program. Students will be informed of admissions decisions as soon as possible, generally before mid-March.

All supporting documentation should be uploaded online when you apply. If this is not possible, please send documentation to:

John Connolly
Graduate Program Coordinator
The University of Kansas
Department of Molecular Biosciences
Haworth Hall
1200 Sunnyside Ave., Room 2034
Lawrence, KS 66045-7566

Ph.D. Degree Requirements

Biochemistry and Biophysics

General Requirements for All Ph.D. Students

All general requirements must be fulfilled. Refer to each discipline for specific course requirements. General requirements include

1. At least 3 individual laboratory rotations during the first two semesters of graduate study;
2. Enrollment every semester in BIOL 701 Topics in: Molecular Biosciences Seminar;
3. Completion of the following courses: BIOL 804 Scientific Integrity: Molecular Biosciences, BIOL 807 Graduate Molecular Biosciences, and BIOL 818 Techniques in Molecular Biosciences;
4. A Research Skills and Responsible Scholarship requirement (satisfied by completion of BIOL 818) and a Responsible Scholarship requirement (satisfied by BIOL 804);
5. A minimum of 2 semesters of graduate teaching;
6. A graduate committee established before the beginning of the fall semester of the second year;
specific course requirements. General requirements include

All general requirements must be fulfilled. Refer to each discipline for
specific course requirements. General requirements include

1. At least 3 individual laboratory rotations during the first two semesters of
graduate study;
2. Enrollment every semester in BIOL 701 Topics in: Molecular
Biosciences Seminar;
3. Completion of the following courses: BIOL 804 Scientific Integrity:
Molecular Biosciences; BIOL 807 Graduate Molecular Biosciences,
and BIOL 818 Techniques in Molecular Biosciences;
4. A Research Skills and Responsible Scholarship requirement
(satisfied by completion of BIOL 818) and a Responsible Scholarship
requirement (satisfied by BIOL 804);
5. A minimum of 2 semesters of graduate teaching;
6. A graduate committee established before the beginning of the fall
semester of the second year;
7. A minimum of 1 annual graduate committee meeting;
8. A written preliminary examination in the form of a research proposal
completed by the end of the spring semester of the second year of
graduate study (BIOL 925);
9. A comprehensive oral examination held no later than October 1
of the fall semester of the third year of graduate study (successful
completion of the comprehensive oral examination admits the student
to candidacy for the Ph.D. degree);
10. A dissertation based on original research presented to the dissertation
examination committee for evaluation and presented and defended in
a formal public lecture; and
11. Completion of the degree in 7 years.

Note: Contact your department or program for more information about
research skills and responsible scholarship, and the current requirements
for doctoral students. Current policies on Doctoral Research Skills and
Responsible Scholarship are listed in the KU Policy Library.

First-year Curriculum for All Students
First-year courses include:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 701</td>
<td>Topics in: ____ (Molecular Biosciences Seminar. 1-3 Enrollment required every semester)</td>
</tr>
<tr>
<td>BIOL 804</td>
<td>Scientific Integrity: Molecular Biosciences 1</td>
</tr>
<tr>
<td>BIOL 807</td>
<td>Graduate Molecular Biosciences 6</td>
</tr>
<tr>
<td>BIOL 818</td>
<td>Techniques in Molecular Biosciences 2</td>
</tr>
<tr>
<td>BIOL 985</td>
<td>Advanced Study (fall and spring semester)  1-10</td>
</tr>
</tbody>
</table>

Specific Ph.D. Requirements: Biochemistry and Biophysics

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 750</td>
<td>Advanced Biochemistry 3</td>
</tr>
<tr>
<td>BIOL 901</td>
<td>Graduate Seminar in Biochemistry and Biophysics (one semester) 1</td>
</tr>
<tr>
<td>BIOL 918</td>
<td>Modern Biochemical and Biophysical Methods 4</td>
</tr>
<tr>
<td>BIOL 952</td>
<td>Introduction to Molecular Modeling 3</td>
</tr>
</tbody>
</table>

The graduate committee may recommend that additional courses be taken.

Microbiology
General Requirements for All Ph.D. Students
All general requirements must be fulfilled. Refer to each discipline for
specific course requirements. General requirements include

1. At least 3 individual laboratory rotations during the first two semesters of
graduate study;
2. Enrollment every semester in BIOL 701 Topics in: Molecular
Biosciences Seminar;
3. Completion of the following courses: BIOL 804 Scientific Integrity:
Molecular Biosciences, BIOL 807 Graduate Molecular Biosciences,
and BIOL 818 Techniques in Molecular Biosciences;
4. A Research Skills and Responsible Scholarship requirement
(satisfied by completion of BIOL 818) and a Responsible Scholarship
requirement (satisfied by BIOL 804);
5. A minimum of 2 semesters of graduate teaching;
6. A graduate committee established before the beginning of the fall
semester of the second year;
7. A minimum of 1 annual graduate committee meeting;
8. A written preliminary examination in the form of a research proposal
completed by the end of the spring semester of the second year of
graduate study (BIOL 925);
9. A comprehensive oral examination held no later than October 1
of the fall semester of the third year of graduate study (successful
completion of the comprehensive oral examination admits the student
to candidacy for the Ph.D. degree);
10. A dissertation based on original research presented to the dissertation
examination committee for evaluation and presented and defended in
a formal public lecture; and
11. Completion of the degree in 7 years.

Note: Contact your department or program for more information about
research skills and responsible scholarship, and the current requirements
for doctoral students. Current policies on Doctoral Research Skills and
Responsible Scholarship are listed in the KU Policy Library.

Specific Ph.D. Requirements: Biochemistry & Biophysics; Microbiology; or Molecular, Cellular, & Developmental Biology

First-year Curriculum for All Students
First-year courses include:

<table>
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<th>Course</th>
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<tbody>
<tr>
<td>BIOL 701</td>
<td>Topics in: ____ (Molecular Biosciences Seminar. 1-3 Enrollment required every semester)</td>
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<td>BIOL 807</td>
<td>Graduate Molecular Biosciences 6</td>
</tr>
<tr>
<td>BIOL 818</td>
<td>Techniques in Molecular Biosciences 2</td>
</tr>
<tr>
<td>BIOL 985</td>
<td>Advanced Study (fall and spring semester)  1-10</td>
</tr>
</tbody>
</table>

Specific Ph.D. Requirements: Microbiology

Select at least four of the following five graduate courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 811</td>
<td>Advanced Molecular and Cellular Immunology</td>
</tr>
<tr>
<td>BIOL 812</td>
<td>Mechanisms of Host-Parasite Relationships</td>
</tr>
<tr>
<td>BIOL 813</td>
<td>Advanced Bacterial Pathogenesis</td>
</tr>
<tr>
<td>BIOL 814</td>
<td>Advanced Molecular Virology</td>
</tr>
<tr>
<td>BIOL 815</td>
<td>Advanced Molecular Genetics</td>
</tr>
</tbody>
</table>

The graduate committee may recommend that additional courses be taken.

Molecular, Cellular, and Developmental Biology
General Requirements for All Ph.D. Students
All general requirements must be fulfilled. Refer to each discipline for
specific course requirements. General requirements include

1. At least 3 individual laboratory rotations during the first two semesters of
graduate study;
2. Enrollment every semester in BIOL 701 Topics in: Molecular
Biosciences Seminar;
3. Completion of the following courses: BIOL 804 Scientific Integrity:
Molecular Biosciences, BIOL 807 Graduate Molecular Biosciences,
and BIOL 818 Techniques in Molecular Biosciences;
4. A Research Skills and Responsible Scholarship requirement
(satisfied by completion of BIOL 818) and a Responsible Scholarship
requirement (satisfied by BIOL 804);
5. A minimum of 2 semesters of graduate teaching;
6. A graduate committee established before the beginning of the fall semester of the second year;
7. A minimum of 1 annual graduate committee meeting;
8. A written preliminary examination in the form of a research proposal completed by the end of the spring semester of the second year of graduate study (BIOL 925);
9. A comprehensive oral examination held no later than October 1 of the fall semester of the third year of graduate study (successful completion of the comprehensive oral examination admits the student to candidacy for the Ph.D. degree);
10. A dissertation based on original research presented to the dissertation examination committee for evaluation and presented and defended in a formal public lecture; and
11. Completion of the degree in 7 years.

Note: Contact your department or program for more information about research skills and responsible scholarship, and the current requirements for doctoral students. Current policies on Doctoral Research Skills and Responsible Scholarship are listed in the KU Policy Library.

First-year Curriculum for All Students

First-year courses include:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 701</td>
<td>Topics in: ____ (Molecular Biosciences Seminar)</td>
<td>1-3</td>
</tr>
<tr>
<td>BIOL 804</td>
<td>Scientific Integrity: Molecular Biosciences</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 807</td>
<td>Graduate Molecular Biosciences</td>
<td>6</td>
</tr>
<tr>
<td>BIOL 818</td>
<td>Techniques in Molecular Biosciences</td>
<td>2</td>
</tr>
<tr>
<td>BIOL 985</td>
<td>Advanced Study (fall and spring semester)</td>
<td>1-10</td>
</tr>
</tbody>
</table>

Specific Ph.D. Requirements: Molecular, Cellular, and Developmental Biology

In addition to those courses listed above, all MCDB PhD students are required to take a minimum of three (3) graduate-level courses (numbered 600 and above) that are collectively worth a minimum of nine (9) credits. All such classes must be completed by the end of the second year of graduate study. A number of acceptable classes are offered each year. Please see the graduate handbook for an up-to-date list of possible courses.