BIOCHEMISTRY, M.S.

Biochemistry is the study of biological molecules, their roles in the cell, and the chemistry of their reactions in living systems. The Integrated Program in Biochemistry (IPiB) is the merged graduate program between the Department of Biochemistry (in the College of Agricultural and Life Sciences) and the Department of Biomolecular Chemistry (in the School of Medicine and Public Health). The program trains the next generation of biochemists and prepares them for 21st century challenges in science. IPiB offers a Ph.D. degree with a major in biochemistry. Although an M.S. degree is officially offered, students are not admitted for a terminal master’s degree.

From atoms and cells to plants and animals, biochemistry research in IPiB is at the forefront of modern science. We are home to around 100 graduate students and 52 world-class faculty pursuing cutting-edge research in all areas of biochemistry, including: cell and developmental biology, chemical biology, endocrinology, enzymology, immunology, metabolism, molecular genetics, molecular medicine, physical biochemistry and biophysics, quantitative biology, structural biology, systems and synthetic biology, and virology. The Program teaches critical thinking skills, applicable to a wide range of professional fields that students pursue after graduation.

The size and breadth of IPiB provide unique opportunities for graduate students who want to pursue a degree in one of the top biochemistry graduate programs in the nation. Our modern facilities are filled with labs carrying out groundbreaking research in a collaborative, friendly, and inspirational atmosphere. Welcome to IPiB and we hope that you can share our enthusiasm for the biochemical sciences!

DUAL DEGREES

The program participates with the School of Medicine and Public Health in offering a joint program for students wishing to complete both the M.D. and Ph.D. degrees. The basic prerequisites and degree requirements for the Ph.D. in the M.D./Ph.D. program are identical to those for the major in biochemistry; however, the minor may be taken in medical sciences. For the prerequisites and degree requirements for the M.D. degree, as well as the online application form, see Medical Scientist Training Program (http://mstp.med.wisc.edu).

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum academic progress and degree requirements (http://guide.wisc.edu/graduate/ #policiesandrequirementstext), in addition to the program requirements listed below.

MAJOR REQUIREMENTS

MODE OF INSTRUCTION

<table>
<thead>
<tr>
<th>Face to Face</th>
<th>Evening/Weekend</th>
<th>Online</th>
<th>Hybrid</th>
<th>Accelerated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Mode of Instruction Definitions

**Evening/Weekend:** These programs are offered in an evening and/or weekend format to accommodate working schedules. Enjoy the advantages of on-campus courses and personal connections, while keeping your day job. For more information about the meeting schedule of a specific program, contact the program.

**Online:** These programs are offered primarily online. Many available online programs can be completed almost entirely online with all online programs offering at least 50 percent or more of the program work online. Some online programs have an on-campus component that is often designed to accommodate working schedules. Take advantage of the convenience of online learning while participating in a rich, interactive learning environment. For more information about the online nature of a specific program, contact the program.

**Hybrid:** These programs have innovative curricula that combine on-campus and online formats. Most hybrid programs are completed on-campus with a partial or completely online semester. For more information about the hybrid schedule of a specific program, contact the program.

**Accelerated:** These on-campus programs are offered in an accelerated format that allows you to complete your program in a condensed time-frame. Enjoy the advantages of on-campus courses with minimal disruption to your career. For more information about the accelerated nature of a specific program, contact the program.

CURRICULAR REQUIREMENTS

Minimum
Credit
Requirement

Minimum
Residence
Credit
Requirement

Minimum
Graduate
Coursework
Requirement

All coursework must be completed graduate-level coursework; courses with the Graduate Level Coursework attribute are identified and searchable in the university’s Course Guide (https://registrar.wisc.edu/course-guide/).

Overall
Graduate GPA
Requirement

3.00 GPA required.
Other Grade Requirements The Graduate School requires an average grade of B or better in all coursework (300 or above, not including research credits) taken as a graduate student unless conditions for probationary status require higher grades. Grades of Incomplete are considered to be unsatisfactory if they are not removed during the next enrolled semester.

Assessments and Examinations Upon completion of the Graduate School’s and IPiB’s minimum requirements for a master’s degree, whether to confer the degree is up to the student’s thesis advisor.

Language n/a

REQUIRED COURSES

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOCHEM 660</td>
<td>Methods in Biochemistry</td>
<td>2</td>
</tr>
<tr>
<td>BIOCHEM/ BMOLCHEM 701</td>
<td>Professional Responsibility</td>
<td>1</td>
</tr>
<tr>
<td>BIOCHEM 729</td>
<td>Advanced Topics (From Atoms to Molecules)</td>
<td>3</td>
</tr>
<tr>
<td>BMOLCHEM 720</td>
<td>Experimental Design and Paradigms in Cellular Biochemistry and Molecular Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOCHEM 990</td>
<td>Research 1</td>
<td>Varies</td>
</tr>
<tr>
<td>or BMOLCHEM 990</td>
<td>Advanced Biomolecular Chemistry and Research</td>
<td></td>
</tr>
</tbody>
</table>

Seminars After the first semester of work, M.S. candidates must maintain continuous seminar enrollment each semester in one of the approved advanced (900-level) seminars.

POLICIES

GRADUATE SCHOOL POLICIES

The Graduate School’s Academic Policies and Procedures (https://grad.wisc.edu/acadpolicy) provide essential information regarding general university policies. Program authority to set degree policies beyond the minimum required by the Graduate School lies with the degree program faculty. Policies set by the academic degree program can be found below.

MAJOR-SPECIFIC POLICIES

GRADUATE PROGRAM HANDBOOK

The Graduate Program Handbook (https://ipib.wisc.edu/c_students_handbook.php) is the repository for all of the program’s policies and requirements.

Prior Coursework

Graduate Work from Other Institutions

For well-prepared advanced students, the Program may accept up to 6 credits of prior graduate coursework from other institutions towards the minimum graduate degree credit and minimum graduate coursework (50%) requirement. The minimum graduate residence credit requirement can be satisfied only with courses taken as a graduate student at UW–Madison.

CREDITS PER TERM ALLOWED 12 credits

TIME CONSTRAINTS

Master’s degree students who have been absent for five or more consecutive years lose all credits that they have earned before their absence. Individual programs may count the coursework students completed prior to their absence for meeting program requirements; that coursework may not count toward Graduate School credit requirements.

OTHER

Students may matriculate only in the fall semester, and a master’s degree is not offered as a terminal degree.

PROFESSIONAL DEVELOPMENT

GRADUATE SCHOOL RESOURCES

Take advantage of the Graduate School’s professional development resources (https://grad.wisc.edu/pd) to build skills, thrive academically, and launch your career.

LEARNING OUTCOMES

1. Gain a broad understanding of the biochemical principles that underlie all biological processes.
2. Become aware of the current limitations of the state of understanding of this discipline and the strategies that are required to advance the field.

3. Formulate and design new approaches that extend and apply biochemical principles beyond their current boundaries.

4. Explore career development opportunities in industry, government and academia to realize professional goals and paths.

5. Develop teaching and mentoring skills in both lecture and laboratory settings.

6. Foster professional and ethical conduct in the sciences, including but not limited to: exposition of the scientific method; ethical design of experimental protocols; reproducibility in science; professional behavior in industrial, government, and academic settings; documentation of scientific results; communication to other scientists and the public; peer review; and confidentiality.

**PEOPLE**

**Faculty:** Professors B. Fox (Chair, Department of Biochemistry), Kiley (Chair, Department of Biomolecular Chemistry), Amasino, Ansari, Attie, Audhya, Bednarek, Brow, Butcher, Chanda, Clagett-Dame, Coon, Cox, Craciun, Craig, Denu, Dvinge, Engin, C. Fox, Friesen, Harrison, Hayes, Henzler-Wildman, Holden, Hoskins, Hull, Keck, Kimble, Landick, Lewis, Markley, Martin, Merrins, Mitchell, Mosher, Ntambi, Pagliarini, Palmenberg, Pike, Ralph, Raman, Rayment, Record, Romero, Senes, Sheets, Sussman, Venturelli, Wang, Weibel, Wickens, Wildonger