

# BIOTECHNOLOGY, M.S.

The Master of Science (M.S.) in Biotechnology is designed for working professionals and provides students with an overarching view of modern biotechnology operations, addressing fundamental scientific and legal matters, innovative technologies and complex business issues. Students thrive in a face-to-face environment rich in academic and industrial collaboration, leaving the program prepared to assume leadership roles in the biotechnology industry. Practical and results oriented, this program provides the foundation necessary for succeeding and advancing in one of the fastest growing and most complex industries in the world. Top-rated UW–Madison faculty and talented business partners in Wisconsin combine their expertise to provide hands-on, problem-solving experiences while offering flexible schedules for students, including convenient weekend and evening courses.

If you are seeking the fully online program, please see the M.S. in Applied Biotechnology (<https://guide.wisc.edu/graduate/cell-regenerative-biology/applied-biotechnology-ms/>) Program at UW–Madison.

## ADMISSIONS

Please consult the table below for key information about this degree program's admissions requirements. The program may have more detailed admissions requirements, which can be found below the table or on the program's website.

Graduate admissions is a two-step process between academic programs and the Graduate School. **Applicants must meet** the minimum requirements (<https://grad.wisc.edu/apply/requirements/>) **of the Graduate School as well as the program(s)**. Once you have researched the graduate program(s) you are interested in, apply online (<https://grad.wisc.edu/apply/>).

Requirements	Detail
Fall Deadline	May 1
Spring Deadline	The program does not admit in the spring.
Summer Deadline	The program does not admit in the summer.
GRE (Graduate Record Examinations)	Not required.
English Proficiency Test	Every applicant whose native language is not English or whose undergraduate instruction was not in English must provide an English proficiency test score and meet the Graduate School minimum requirements ( <a href="https://grad.wisc.edu/apply/requirements/#english-proficiency">https://grad.wisc.edu/apply/requirements/#english-proficiency</a> ).
Other Test(s) (e.g., GMAT, MCAT)	n/a
Letters of Recommendation Required	3

## APPLY TO THE GRADUATE SCHOOL

Applications are submitted online only; paper copy applications are not available. Apply to the Graduate School online and select the "Biotechnology MS" program option:

### THE GRADUATE SCHOOL'S ONLINE APPLICATION ([HTTPS://APPLY.GRAD.WISC.EDU/](https://apply.grad.wisc.edu/))

The online application and application fee must be submitted electronically to the Graduate School before your application can be considered for admission.

The following materials must be uploaded to your Graduate School online application:

- Your professional resume
- Unofficial transcript(s) for your undergraduate degree institution(s) and unofficial transcripts from any post-undergraduate degrees (if applicable)
- Three Letters of Recommendation (initiated and processed online via the Graduate School online application)
- A one- or two-page Statement of Purpose (uploaded via the Graduate School online application) that provides the following: *A brief summary of your professional and academic background, a clear explanation of your short- and long-term professional goals, and a clear explanation of how the M.S. in Biotechnology degree will help you meet your career goals. (Please be specific to the M.S. in Biotechnology degree and its curriculum.)*

Additional Graduate School resources:

- Graduate School Admission Frequently Asked Questions (<https://grad.wisc.edu/apply/#FAQ>)
- Graduate School Admission Requirements (<https://grad.wisc.edu/apply/requirements/>)

If you have any questions about applying to the M.S. in Biotechnology Program (<https://www.ms-biotech.wisc.edu>) or about the status of your application, you should contact Bryan Husk (<https://www.wisc.edu/directories/person/?q=Bryan%20Husk&email=bthusk@wisc.edu&savedQuery=Bryan%20Husk&returnPath=/directories/>).

## APPLICATION DEADLINE

Applications for Fall semester are accepted until a full cohort of up to 28 students has committed to attend. Spaces are sometimes available for strong applicants until as late as June or July for domestic applicants, however, **the cutoff date for international applicants is May 1st** each year. There is no admission for Spring or Summer terms.

## FUNDING

## GRADUATE SCHOOL RESOURCES

Resources to help you afford graduate study might include assistantships, fellowships, traineeships, and financial aid. Further funding information (<https://grad.wisc.edu/funding/>) is available from the Graduate School.

Be sure to check with your program for individual policies and restrictions related to funding.

## PROGRAM INFORMATION

The M.S. in Biotechnology Program does not offer any scholarships or financial aid.

Students enrolled in this program are not eligible to receive tuition remission from graduate assistantship appointments at this institution.

However, students may contact the Office of Student Financial Aid (<https://financialaid.wisc.edu/>) to discuss federal loan programs and other lending opportunities.

## REQUIREMENTS

### MINIMUM GRADUATE SCHOOL REQUIREMENTS

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

### MAJOR REQUIREMENTS

#### MODE OF INSTRUCTION

Face to Face	Evening/ Weekend	Online	Hybrid	Accelerated
Yes	Yes	No	No	No

#### Mode of Instruction Definitions

**Accelerated:** Accelerated programs are offered at a fast pace that condenses the time to completion. Students typically take enough credits aimed at completing the program in a year or two.

**Evening/Weekend:** Courses meet on the UW–Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

**Face-to-Face:** Courses typically meet during weekdays on the UW–Madison Campus.

**Hybrid:** These programs combine face-to-face and online learning formats. Contact the program for more specific information.

**Online:** These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

### CURRICULAR REQUIREMENTS

#### Requirement Detail

Minimum Credit Requirement

Minimum Residence Credit Requirement

Minimum Graduate Coursework Requirement 100% of credits applied toward the graduate degree credit requirement must be completed in graduate-level coursework. Details can be found in the Graduate School's Minimum Graduate Coursework (50%) policy (<https://policy.wisc.edu/library/UW-1244> (<https://policy.wisc.edu/library/UW-1244/>)).

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 None.

Language Requirements None.

### REQUIRED COURSES

Code	Title	Credits
<b>Year 1, Fall Semester</b>		
CRB 802	Business of Biotechnology: Fundamentals of Product Development	2
CRB 800	Intellectual Property, Patents and Licensing	2
CRB 804	Biotechnology Regulation and Ethics	2
CRB 803	Molecular Technologies I	2
<b>Year 1, Spring Semester</b>		
CRB 824	Molecular Technologies II	3
CRB 820	Biotechnology Operations	5
CRB 843	Project Management and Leadership	2
<b>Year 2, Fall Semester</b>		
CRB 841	Business of Biotechnology: Contemporary Challenges and Applications	2
CRB 830	Early Drug Discovery	4
CRB 834	Molecular Technologies III	2
<b>Year 2, Spring Semester</b>		
CRB 842	Business of Biotechnology: Sustaining Growth	3
CRB 844	Advanced Biotechnology: Global Perspectives	3
CRB 845	Professional Development and Effective Management	1
CRB 846	Biotechnology Capstone	1
<b>Total Credits</b>		<b>34</b>

Students in this program may not take courses outside the prescribed curriculum without faculty advisor and program director approval.

Students in this program cannot enroll concurrently in other undergraduate, graduate or certificate programs.

## 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

#### PRIOR COURSEWORK

##### Graduate Work from Other Institutions

No prior coursework from other institutions may be applied toward program requirements.

##### UW–Madison Undergraduate

No prior coursework from UW–Madison undergraduate career may be applied toward program requirements.

##### UW–Madison University Special

No prior coursework taken as a UW–Madison University Special student may be applied toward program requirements.

#### PROBATION

The Graduate School regularly reviews the record of any student who earned grades of BC, C, D, F, or Incomplete in a graduate course (300 or above), or grade of U in research credits. This review could result in academic probation with a hold on future enrollment or in being suspended from the Graduate School.

#### ADVISOR / COMMITTEE

Every graduate student is required to have an advisor. To ensure that students are making satisfactory progress toward a degree, the Graduate School expects them to meet with their advisor on a regular basis.

#### CREDITS PER TERM ALLOWED

15 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.

#### GRIEVANCES AND APPEALS

These resources may be helpful in addressing your concerns:

- Bias or Hate Reporting (<https://doso.students.wisc.edu/bias-or-hate-reporting/>)
- Graduate Assistantship Policies and Procedures (<https://hr.wisc.edu/policies/gapp/#grievance-procedure>)
- Hostile and Intimidating Behavior Policies and Procedures (<https://hr.wisc.edu/hib/>)

- Office of the Provost for Faculty and Staff Affairs (<https://facstaff.provost.wisc.edu/>)
- Dean of Students Office (<https://doso.students.wisc.edu/>) (for all students to seek grievance assistance and support)
- Employee Assistance (<http://www.eao.wisc.edu/>) (for personal counseling and workplace consultation around communication and conflict involving graduate assistants and other employees, post-doctoral students, faculty and staff)
- Employee Disability Resource Office (<https://employee disabilities.wisc.edu/>) (for qualified employees or applicants with disabilities to have equal employment opportunities)
- Graduate School (<https://grad.wisc.edu/>) (for informal advice at any level of review and for official appeals of program/departmental or school/college grievance decisions)
- Office of Compliance (<https://compliance.wisc.edu/>) (for class harassment and discrimination, including sexual harassment and sexual violence)
- Office of Student Conduct and Community Standards (<https://conduct.students.wisc.edu/>) (for conflicts involving students)
- Ombuds Office for Faculty and Staff (<http://www.ombuds.wisc.edu/>) (for employed graduate students and post-docs, as well as faculty and staff)
- Title IX (<https://compliance.wisc.edu/titleix/>) (for concerns about discrimination)

#### Grievance Policy for Graduate Programs in the School of Medicine and Public Health

Any student in a School of Medicine and Public Health graduate program who feels that they have been treated unfairly in regards to educational decisions and/or outcomes or issues specific to the graduate program, including academic standing, progress to degree, professional activities, appropriate advising, and a program's community standards by a faculty member, staff member, postdoc, or student has the right to complain about the treatment and to receive a prompt hearing of the grievance following these grievance procedures. Any student who discusses, inquiries about, or participates in the grievance procedure may do so openly and shall not be subject to intimidation, discipline, or retaliation because of such activity. Each program's grievance advisor is listed on the "Research" tab of the SMPH intranet (<https://intranet.med.wisc.edu/>).

#### Exclusions

This policy does not apply to employment-related issues for Graduate Assistants in TA, PA and/or RA appointments. Graduate Assistants will utilize the Graduate Assistantship Policies and Procedures (<https://hr.wisc.edu/policies/gapp/>) (GAPP) grievance process to resolve employment-related issues.

This policy does not apply to instances when a graduate student wishes to report research misconduct. For such reports refer to the UW–Madison Policy for Reporting Research Misconduct for Graduate Students and Postdoctoral Research Associates (<https://research.wisc.edu/kb-article/?id=84924>).

#### Requirements for Programs

The School of Medicine and Public Health Office of Basic Research, Biotechnology and Graduate Studies requires that each graduate program designate a grievance advisor, who should be a tenured faculty member, and will request the name of the grievance advisor annually. The program director will serve as the alternate grievance advisor in the event that the grievance advisor is named in the grievance. The program must

notify students of the grievance advisor, including posting the grievance advisor's name on the program's Guide page and handbook.

The grievance advisor or program director may be approached for possible grievances of all types. They will spearhead the grievance response process described below for issues specific to the graduate program, including but not limited to academic standing, progress to degree, professional activities, appropriate advising, and a program's community standards. They will ensure students are advised on reporting procedures for other types of possible grievances and are supported throughout the reporting process. Resources (<https://grad.wisc.edu/current-students/#reporting-incidents>) on identifying and reporting other issues have been compiled by the Graduate School.

### Procedures

1. The student is advised to initiate a written record containing dates, times, persons, and description of activities, and to update this record while completing the procedures described below.
2. If the student is comfortable doing so, efforts should be made to resolve complaints informally between individuals before pursuing a formal grievance.
3. Should a satisfactory resolution not be achieved, the student should contact the program's grievance advisor or program director to discuss the complaint. The student may approach the grievance advisor or program director alone or with a UW-Madison faculty or staff member. The grievance advisor or program director should keep a record of contacts with regards to possible grievances. The first attempt is to help the student informally address the complaint prior to pursuing a formal grievance. The student is also encouraged to talk with their faculty advisor regarding concerns or difficulties.
4. If the issue is not resolved to the student's satisfaction, the student may submit a formal grievance to the grievance advisor or program director in writing, within 60 calendar days from the date the grievant first became aware of, or should have become aware of with the exercise of reasonable diligence, the cause of the grievance. To the fullest extent possible, a grievance shall contain a clear and concise statement of the grievance and indicate the issue(s) involved, the relief sought, the date(s) the incident or violation took place, and any specific policy involved.
5. On receipt of a written grievance, the following steps will occur. The final step must be completed within 30 business days from the date the grievance was received. The program must store documentation of the grievance for seven years. Significant grievances that set a precedent may be stored indefinitely.
  - a. The grievance advisor or program director will convene a faculty committee composed of at least three members to manage the grievance. Any faculty member involved in the grievance or who feels that they cannot be impartial may not participate in the committee. Committee composition should reflect diverse viewpoints within the program.
  - b. The faculty committee, through the grievance advisor or program director, will obtain a written response from the person or persons toward whom the grievance is directed. The grievance advisor or program director will inform this person that their response will be shared with the student filing the grievance.
  - c. The grievance advisor or program director will share the response with the student filing the grievance.
  - d. The faculty committee will make a decision regarding the grievance. The committee's review shall be fair, impartial, and timely. The grievance advisor or program director will report on the action taken by the committee in writing to both the student and the person toward whom the grievance was directed.
6. If either party (the student or the person or persons toward whom the grievance is directed) is unsatisfied with the decision of the program's faculty committee, the party may file a written appeal to the SMPH senior associate dean for basic research, biotechnology and graduate studies within 10 business days from the date of notification of the program's faculty committee. The following steps will occur:
  - a. The grievant will be notified in writing, within 5 business days of the written appeal, acknowledging receipt of the formal appeal and establishing a timeline for the review to be completed.
  - b. The senior associate dean or their designee may request additional materials and/or arrange meetings with the grievant and/or others. If meetings occur, the senior associate dean or their designee will meet with both the grievant and the person or persons toward whom the grievance is directed.
  - c. The senior associate dean or their designee will assemble an ad hoc committee of faculty from outside of the student's graduate program and ask them to prepare a written recommendation on whether to uphold or reverse the decision of the program on the student's initial grievance. The committee may request additional materials and/or arrange meetings with the grievant and/or others. If meetings occur, the committee will meet with both the grievant and the person or persons toward whom the grievance is directed.
  - d. The senior associate dean or their designee will make a final decision within 20 business days of receipt of the committee's recommendation.
  - e. The SMPH Office of Basic Research, Biotechnology, and Graduate Studies must store documentation of the grievance for seven years. Grievances that set a precedent may be stored indefinitely.
7. The student may file an appeal of the School of Medicine and Public Health decision with the Graduate School. See the Grievances and Appeals section of the Graduate School's Academic Policies and Procedures (<https://grad.wisc.edu/documents/grievances-and-appeals/>).

### Time Limits

Steps in the grievance procedures must be initiated and completed within the designated time periods except when modified by mutual consent. If the student fails to initiate the next step in the grievance procedure within the designated time period, the grievance will be considered resolved by the decision at the last completed step.

### OTHER

The M.S. in Biotechnology Program does not offer any financial aid, and **graduate students are not permitted to accept any research, project, or teaching assistantship positions that would waive**

**tuition.** Students with two or more years work experience after receiving their bachelor's degree are preferred for admission.

## 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. Apply core scientific and business principles to distinguish the difference between scientific and commercial success, and gain insight in to the challenge of balancing product usefulness with positive return on investment.
2. Understand how regulation is developed and how it interacts with business and finance to influence the formation and growth of technology companies.
3. Understand and apply modern biotechnology methods and practice, as well as effective written and oral scientific communication, through hands-on participation in the laboratory.
4. Apply knowledge of seven functional specialties (regulatory affairs, quality assurance, biomanufacturing, quality control, non-clinical development, clinical development and project management) to the coordinated process of product development.
5. Understand the processes, technologies, scientific principles and major challenges of the early drug discovery process as it continues to evolve.
6. Evaluate the potential of a product or technology based on the organizational resources required for full commercialization.
7. Understand firm-level strategic development, and apply strategic business principles in day-to-day operations.
8. Demonstrate an ability to identify a global problem, and how biotechnology may offer a novel solution(s).
9. Integrate the technical, sociological and leadership skills that are necessary to design, use and defend a global project management plan.
10. Integrate topics in science, policy, law and business in order to lead the development and commercialization of new and promising technologies.
11. Recognize and apply principles of ethical and professional conduct develop long-term networks and relationships with industry partners.
12. Understand the ethical and safety issues that help shape public policies on biotechnology and its applications.

## PEOPLE

The program's instructional faculty are a blend of world-renowned scholars from across UW–Madison and dynamic leaders from the region's private biotechnology industries. UW–Madison faculty come from many Schools and Colleges, including the following:

- The School of Medicine and Public Health
- The School of Pharmacy
- The Wisconsin School of Business
- The Wisconsin Law School

- The Wisconsin Alumni Research Foundation
- M.S. in Biotechnology Program Faculty and Instructors (<https://ms-biotech.wisc.edu/the-biotech-badgers/program-faculty-and-instructors/>)
- M.S. in Biotechnology Program Leadership and Staff (<https://ms-biotech.wisc.edu/program-leadership-and-staff/>)

Anjon (Jon) Audhya, Ph.D.

- Senior Associate Dean for Basic Research, Biotechnology, and Graduate Studies
- Professor, School of Medicine and Public Health

Natalie Betz, Ph.D.

- Academic Director for the M.S. in Biotechnology Program
- Academic Director for the UW-Madison online M.S. in Applied Biotechnology
- Faculty Instructor, School of Medicine and Public Health

Bryan Husk, M.A.

- Administrative Associate Director for the M.S. in Biotechnology Program
- Administrative Associate Director for the online M.S. in Applied Biotechnology (UW-Madison campus)
- Academic Staff, School of Medicine and Public Health
- [bthusk@wisc.edu](mailto:bthusk@wisc.edu)
- 608-265-0773 office
- 608-577-9182 cell

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