

# Biotechnology Management, M.S.

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The M.S. in Biotechnology Management is a joint graduate degree that will prepare scientists for leadership roles in biotechnology, science, and engineering-based companies through a curriculum comprised of courses from the Department of Molecular Biology and Biochemistry (MB&B) in the School of Biological Sciences and The Paul Merage School of Business. Students will receive advanced training in biotechnology through course work, a teaching laboratory, and two quarters of independent research in a faculty laboratory of their choosing. They will also learn to think as a business manager by solving product development challenges through consulting projects, creating business plans, and by exposure to current issues within the biotechnology sector. Students will develop quantitative and qualitative skills along with business communication skills. Students will learn about business from the biotechnology perspective and biotechnology from the business perspective and will be taught to think about their work through the lens of innovation, a crucial view for their careers. Importantly, the MSBTM program is fully interdisciplinary, as students are immersed in the campus cultures of both science and business. They take their science courses with M.S. and Ph.D. students from several campus graduate programs, and they take their business/management courses with students in the full-time M.B.A. or FEMBA programs.

## Program Details

Some of the distinctive features of the MSBTM program include the following:

- Advanced training in biotechnology through course work and an eight-unit teaching laboratory;
- A research component whereby students will engage in research with a faculty member in either the School of Biological Sciences or the Department of Biomedical Engineering (requests to perform research in labs outside of Biological Sciences or Biomedical Engineering will be considered on a case-by-case basis). This research component is considered to be important for careers in the biotechnology industry and makes this program unique worldwide;
- An intensive course, Thinking Strategically in the Digital Age (MGMTMBA 200), which presents fundamental concepts, tools, and solutions from management to initiate students into the concrete challenges that managers in high-performing organizations typically confront. Students will be introduced to the pedagogical methods of case analysis, group problem solving, and group presentations as a means of developing the skills and strategies associated with effective managerial action. The course is structured as a full-time, in-residence intensive;
- An experiential learning component wherein student teams, under the guidance of The Paul Merage School of Business and Department of Molecular Biology and Biochemistry professors, act as a consulting team which works with managers of biotechnology or biological science-based companies on innovative solutions to current problems faced by the companies;
- A business plan component wherein students from biosciences and management prepare a formal business plan for an Entrepreneurship or New Venture Management course;
- A capstone course taught in the spring quarter of the second year by faculty in both Biological Sciences and The Paul Merage School of Business. The cross-listed course, Biotech Management (MOL BIO 253)/Biotech Management (MGMTMBA 293), will integrate the program's two-year curriculum and provide a format for the required comprehensive exam. The curriculum is structured to address a number of management issues in the biotech industry, including finance, product development, pharmaceuticals, project management, regulatory affairs, and ethics. Guest lecturers from the biotech industry will also be invited to talk about both the scientific and management sides of their companies;
- "Proseminar" courses provide students with information and practical skills for success in the program and career planning.

Applicants will apply directly to the Graduate Division for the MSBTM program beginning each fall. The program uses rolling admission deadlines. The priority deadline is January 15; applications received by this date are read first, and we begin filling next fall's class from this group. March 15 is the normal deadline; the remainder of the class is filled by these applicants. If the class is not full after a review of the March 15 applicants, we will accept additional applications until April 30. Prerequisite requirements are similar to those for the Graduate Program in Biotechnology, which include a B.A. or B.S. in Biological Sciences or related discipline and several recommended elective and laboratory courses. Admission to graduate standing in MB&B is generally accorded to those possessing a B.S. in Biological Sciences or an allied field obtained with an acceptable level of scholarship from an institution of recognized standing. Those seeking admission without the prerequisite scholarship record may, in some cases, undertake remedial work; if such work is completed at the stipulated academic level, the applicant will be considered for admission. Those admitted from an allied field may be required to take supplementary upper-division courses in basic biomedical science subjects.

The Graduate Record Examination (GRE) General Test is not required.

Foreign students will be required to submit a TOEFL score and occasionally a TSE score. Applicants from **India** must submit one of the following in order to be eligible for Graduate studies consideration: a continuous 4 year degree from an accredited University, College or Institution or a completed 3 year Bachelor's accompanied with a completed 2 year Masters. The combination of 3+2 would be the equivalent of the U.S. Bachelor's. We do not accept a straight 3 year Bachelor's nor do we accept a 1 year completion of the 2 year Masters in the 3 + 2 combination.

Applicants will be evaluated on their prior academic record and their potential for management and leadership as demonstrated in the submitted application materials: University transcripts, letters of recommendation, resumé with a list of applicable work experience, and two essays. The first is a Statement of Purpose, describing your motivation for this program and future career goals. The second is a Personal History Statement. In this second essay, let us know more about you and your academic and professional journey. We encourage you to describe any barriers you have overcome to pursue your education, and also list your contributions to diversity and inclusive excellence in science or the workplace. After initial application review, some applicants will be invited to a video interview by admissions counselors from the Paul Merage School of Business.

Applicants will be evaluated on their prior academic record and their potential for management and leadership as demonstrated in the submitted application materials (university's transcripts, letters of recommendation, applicable work experience, a Statement of Purpose, and an essay). In addition, there will be an interview by admissions counselors from The Paul Merage School of Business.

### Course Work and Examination Requirements

**M.S. Plan II:** Seventeen required courses, a minimum of 77 units, plus a zero-unit Proseminar sequence (defined below), and a comprehensive examination which will be administered during the jointly taught capstone course in the spring quarter of the second year.

**Required and Recommended Courses, Business:** A total of nine courses adding up to 36 units.

A. Complete	
MGMTMBA 200	Thinking Strategically in the Digital Age
MGMTMBA 298	Merage Consulting Projects
MGMTMBA 214	Entrepreneurship: Planning the New Venture
or MGMTMBA 213	New Venture Management
B. Select three of the following MBA core courses:	
MGMTMBA 201A	Business Analytics: Decision-Making
MGMTMBA 202	Organizational Leadership for Management
MGMTMBA 203A	Financial Reporting
MGMTMBA 204A	Microeconomics for Management in the Digital Age
MGMTMBA 205	Marketing Principles
MGMTMBA 207	Competing with Digital: Technology, Analytics, and Platforms
MGMTMBA 208	Operational Excellence: Processes, Models, and Analytics
MGMTMBA 209A	Managerial Finance
MGMTMBA 210	Strategy: Foundations and Dynamics
C. Complete any three MBA elective courses	

**Required and Recommended Courses, Biotechnology:** A total of seven courses adding up to 36 units. These include:

Two core biological science courses, Nucleic Acid Structure and Function (MOL BIO 203) and Protein Structure and Function (MOL BIO 204);

Two additional graduate-level elective courses in biological sciences or biomedical engineering;

One teaching laboratory course focusing on essential methods in biotechnology, Biotechnology Management Laboratory (MOL BIO 252L); and

Two quarters of research (four units in winter quarter of the second year and eight units in spring quarter of the second year) whereby students will engage in independent research with a faculty member of their choosing in the School of Biological Sciences or Department of Biomedical Engineering (requests to perform research in labs outside of Biological Sciences or Biomedical Engineering will be considered on a case by case basis).

### Proseminar Course

This six-quarter course, MBA Proseminar (MGMTMBA 211), provides students with information and practical skills for success in the program and career planning. The goal is to help clarify goals and develop skills and techniques to successfully manage the job search process for employment upon graduation and throughout one's career. This will be accomplished through workshops, presentations, webinars, and meetings with career counselors. Topics include resume writing, job interview coaching, company hiring practices, and career advice and counseling.

### Capstone Course (Year Two)

Biotech Management (Biotech Management (MOL BIO 253)/Biotech Management (MGMTMBA 293), five units), jointly taught by Biological Sciences and Business School faculty, is designed to integrate the program's two-year curriculum and provide a format for the required comprehensive exam. The curriculum will address a number of scientific and management issues in the biotech industry. Guest lecturers from the biotech industry will also be invited to talk about the scientific and management sides of their companies.