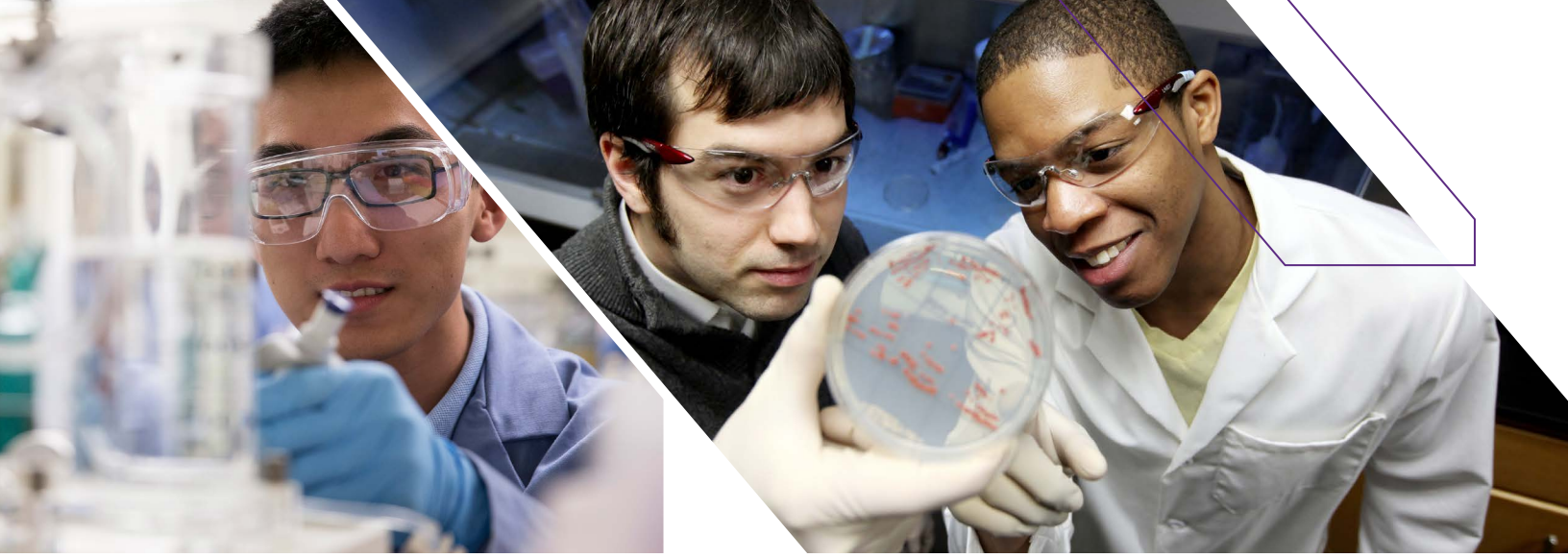
MASTER OF BIOTECHNOLOGY PROGRAM

THE MASTER OF BIOTECHNOLOGY PROGRAM (MBP), administered by the Department of Chemical and Biological Engineering, prepares scientists and engineers for fulfilling and dynamic careers in biotechnology. Students develop the learning and innovation skills demanded by industry through education, extensive laboratory research, practical experience, professional connections, an alumni network, and community outreach.



MASTER OF SCIENCE IN BIOTECHNOLOGY

ADMISSION REQUIREMENTS

MBP accepts scientists and engineers who have taken at least one course in each of the following areas: organic chemistry or biochemistry, general or physical chemistry, biology (such as cellular or molecular), and calculus. The admissions committee reviews each application holistically, and considers GPA, TOEFL scores (if applicable), letters of recommendation, and performance during an interview (in person, or by Skype or phone).

DEGREE REQUIREMENTS

MBP is a full-time 15-month (five quarters) program with an optional internship that extends the program duration to 21 months (seven quarters). Students must:

Complete 21 units

Maintain a GPA of 3.0 or better

Participate in professional development activities

Submit quarterly written research reports in lieu of a thesis

COURSE REQUIREMENTS

The MBP curriculum consists of nine units of required courses and four units of elective courses. Additionally, eight units of research can be completed in either Northwestern laboratories or at local companies.

RESEARCH

MBP offers 1,000 hours of research; an additional 1,000 hours of research available through an optional academic internship. The research is conducted over four quarters and directed by more than 80 Northwestern faculty members from Northwestern Engineering, Weinberg College of Arts and Sciences, and Feinberg School of Medicine. Many faculty members of the Robert H. Lurie Comprehensive Cancer Center serve as MBP research preceptors through a special affiliation.

REQUIRED COURSES

Two units of introductory engineering (for non-engineers): Balances and Kinetics for Bioprocessing (MBiotech 301) and Fluids and Mass Transfer for Bioprocessing (MBiotech 302)

Two units of bioprocess engineering: Kinetics Energetics and Bioreactor Design (MBiotech 476-1) and Properties and Separation of Biologically Produced Molecules (MBiotech 476-2)

Two units of laboratories: Experimental Techniques in Molecular Biotechnology (MBiotech 401) and Bioprocess Engineering Laboratory (MBiotech 402)

Three units of non-technical courses: Technology Commercialization Fundamentals (MBiotech 410), Critical Thinking and Communication (MBiotech 420), and Technology Commercialization Practicum (MBiotech 411) or Regulatory Sciences in Biotechnology (MBiotech 482)

ELECTIVE COURSES

Students complete four electives (on average) selected from a list of 70 courses in the fields of biological sciences, biomedical engineering, chemical and biological engineering, environmental engineering, genetics, genomics, materials science, regulatory science, and statistics. Students also have access to a number of electives offered by the Kellogg School of Management.

INTERNSHIP

An optional paid internship provides students with the opportunity to work in industry for one to two quarters after completing at least the first three quarters of the MBP curriculum. Registration in a non-credit course during the internship allows participants to maintain student standing for insurance, student loan, and visa purposes.

CERTIFICATES

The MBP offers two certificate options at no additional charge: a Nanobiotechnology Certificate and a Sustainability and Global Health Biotechnologies Certificate. Students may also enroll in a Farley Center for Entrepreneurship and Innovation graduate minor, or in a Master of Engineering Management graduate minor.

ADDITIONAL PROGRAM INFORMATION

MBP STUDENTS

The majority of MBP students have recently completed their undergraduate studies and are seeking careers in biotechnology, the pharmaceutical industry, or consulting. Typically, at least half are biology majors; the rest are engineers, biotechnologists, and other science majors. The expected MBP class size is 37–42 students per year.

PROFESSIONAL DEVELOPMENT

MBP alumni, advisory board members, and industrial partners form a diverse international body of professionals, and hold biotechnology positions in government, the pharmaceutical and biotechnology industry, consulting, and academia. Since 2005, more than 200 MBP graduates have found employment with leading pharmaceutical, biotechnology, and consulting companies such as Abbott Laboratories, AbbVie, Amgen, Baxter, Deloitte, DuPont, General Electric, Genentech, Genzyme, GlaxoSmithKline, Hospira, MedImmune, Merck, Novartis, and Pfizer.

Professional development is facilitated by Natalie Champagne, assistant director of external relations and career management. She fosters and maintains relationships with companies, teaches a professional development course, and organizes biotech hub visits.

LEADERSHIP

MBP is led by program director Danielle Tullman-Ercek, as well as associate director Igor Kourkine. An industrial advisory board comprising biotechnology industry professionals advises on academic and professional components of the program.

CONTACT

For more information, call 847–491–7399, or email mbp@northwestern.edu with specific questions.

MBP ALUMNI HOLD BIOTECHNOLOGY POSITIONS IN GOVERNMENT, THE PHARMACEUTICAL INDUSTRY, INDUSTRIAL AND AGRICULTURAL SECTORS, AND ACADEMIA.