

BIOSCIENCE MANAGEMENT (MBS)

Program Director: Anne York, Ph.D
Program Office: College of Business Administration

PROFESSIONAL SCIENCE MASTER'S DEGREE

The Professional Science Master's in Bioscience Management is an interdisciplinary program offering graduate students and working professionals the opportunity to study the business of science. Increasingly, employers are seeking science-trained professionals with an understanding of business, including skills in project management, team building, marketing, finance, and communication. This degree provides graduates with a multi-disciplinary advantage in today's highly competitive job market.

Program Goals

Students who complete the M.S. in Bioscience Management will

1. Understand the process of technology commercialization in the biosciences, including intellectual property protection, regulation, clinical trials, marketability analysis, branding, pricing, financing, licensing, business formation, and management.
2. Be able to develop business plans for commercializing new bioscience products and services.
3. Be well-versed in current issues, developments and techniques in the biological sciences, including the fields of microbiology, genetics, biochemistry, biotechnology, drug development, and biological systems.
4. Develop the leadership and interdisciplinary teaming skills required to be successful in a context that combines science and business.

Faculty

Professors: Moorman, Wingender;
Associate Professors: Duckworth, Hamilton, Reedy, York;
Assistant Professors: Raval, van Dijk, Wachner;
Adjunct Professors: Ahn, Runge, Dixon.

Admission Requirements

Applicants must have a baccalaureate degree and submit the following documents:

1. Completed application form.
2. Official transcripts from all colleges or universities attended
3. Resume
4. Three letters of recommendation
5. GRE, GMAT, MCAT, LSAT, DAT, PCAT or other equivalent graduate school admission test scores.

In addition, a personal interview will be conducted with each applicant as part of the admission process.

Master of Science (M.S.) with a Major in Bioscience Management ***General Requirements***

The Master's Program in Bioscience Management is a 30-hour, non-research-based, weekend graduate program designed to train students in the cross-disciplinary field involving the intersection between business and the biosciences.

Master of Science (M.S.) in Bioscience Management (30 credits)

Course Requirements

MBS 710	Current Issues in the Biosciences	3 credits
MBS 720	Intellectual Property and the Regulatory Process	3 credits
MBS 721	Bioscience Innovation	3 credits
MBS 730	Principles of Experimental Design	3 credits
MBS 731	Principles of Biotechnology	3 credits
MBS 740	Foundations of Drug Therapy	3 credits
MBS 742	Market Opportunity Assessment - Capstone Course	3 credits

(One of the following:)

MBS 711	Principles of Molecular Science	3 credits
MBS 712	Leadership and Teaming in the Biosciences	3 credits

(One of the following:)

MBS 722	Principles of Biological Systems	3 credits
MBS 723	Finance and Marketing for Scientific Ventures	3 credits

(One of the following:)

MBS 732	Bioscience Internship	3 credits
MBS 733	Advanced Science Elective	3 credits

MBS 710 Current Issues in the Biosciences (3) S

Lectures and literature discussion, along with case studies, covering recent advances in the fields of microbiology, biochemistry, and genetics, and how these advances are being commercialized and applied to the development of products and services in a range of fields ranging from agribusiness, pharmaceuticals, nanotechnology, nutraceuticals, and so forth.

MBS 711 Principles of Molecular Science (3) S

This course covers the biochemistry, cellular biology, genetics, and molecular biology of biological systems. Although the primary focus of the class is mammalian systems, plants and microbial systems will also be considered.

MBS 712 Leadership and Teaming in the Biosciences (3) S

In this course, students will be introduced to basic principles of leadership and management and will be provided with the skills needed to successfully manage cross-disciplinary teams typically found in the biosciences. Communication and presentation skills, along with persuasion, negotiation and conflict resolution techniques will be taught and practiced. Students will develop their own professional development plans and career goals.

MBS 720 Intellectual Property and the Regulatory Process (3) I

This course surveys a variety of legal and regulatory issues including business formation and dissolution, securities law, mergers, corporate debt, and forms of doing business; business regulation, including FDA, FTC, USDA, HHS, and other organizations involved in regulating scientific research and business; intellectual property including patents, trademarks, copyrights, trade secrets, non-disclosure agreements, licensing, and contract law; and the role of corporate counsel, among other things.

MBS 721 Bioscience Innovation (3) I

This course will introduce students to the entire life cycle of the bioscience technology commercialization process, beginning with invention disclosure to intellectual property protection, to determining the marketability and market potential for the invention, to addressing whether the discover is better commercialized as a license or start-up to sources and terms of phased funding for the venture.

- MBS 722 Principles of Biological Systems (3) I**
 This course applies the material from Principles of Molecular Sciences to a consideration of how biological systems are regulated at the physiologic, genomic, proteomic, and metabolomic levels in both normal and diseased states.
- MBS 723 Finance and Marketing for Scientific Ventures (3) I**
 This course will introduce students to principles of finance and marketing that relate directly to scientific ventures. Topics in finance might include the pros and cons of debt vs. equity financing, venture capital, IPO's, mergers, investment principles, cash management techniques and cash budgeting, lease vs. purchasing decisions, investment term sheets, and financial statement basics. Topics in marketing might include the role of distribution channels, market size, target markets, life expectancy of the technology, industry and demographic trends, competitor analysis, regulatory and economic changes, new-to-the-world product and service pricing, and marketing research.
- MBS 730 Principles of Experimental Design and Analysis in the Biosciences (3) II**
 This course focuses on common techniques in cell biology, genetics, molecular biology and biochemistry research, along with lab structures and functions, data analysis and interpretation techniques, and research design. Scientific research techniques, along with institutional review and grant administration will also be covered.
- MBS 731 Principles of Biotechnology (3) II**
 The internship will allow students to develop skills outside their current area of expertise through working on a time-limited project within a science and business context. Each internship will be supervised by both a science and business PSM program faculty member.
- MBS 732 Bioscience Internship (3) II**
 The internship will allow students to develop skills outside their current area of expertise through working on a time-limited project within a science and business context. Each internship will be supervised by both a science and business PSM program faculty member.
- MBS 733 Advanced Science Elective (3) II**
 Students may choose from relevant Creighton graduate catalog listings at the 600 level or above such as Biostatistics, Enzymes, Proteins, Peptide Chemistry, Advanced Cell Biology, Advanced Molecular Biology, Molecular Genetics, Molecular Modeling of Peptides, Cell Physiology, and so forth. Alternatively, students may choose to take an equivalent on-line graduate science course from a nationally-accredited university. All advanced science electives must be pre-approved by the program director.
- MBS 740 Foundations of Drug Therapy (3) S**
 This course will familiarize students with general concepts and techniques in drug therapy, including what general classes of drugs do, drug delivery methods, drug actions and interactions, selected drug therapy categories, cancer genomics and so forth. The process of drug discovery and development will also be covered.
- MBS 742 Market Opportunity Assessment - Capstone Course (3) S**
 This course is the capstone practicum. With the tools gained from preceding courses, students, working in cross-disciplinary teams, will write a business plan for assessing market opportunities and commercializing via licensing or start-up a bioscience technology. This plan will involve (as appropriate) a description of the project, research into industry trends and competitor analysis, description of the firm's IP position, management team required to complete the project, target market size, operations, time line, potential funding sources, financial projections, and critical risks. Each team will have both a science and a business mentor.