

M.S. in Applied Biotechnology

Area of Emphasis

The Master of Science in Applied Biotechnology program is designed for students to understand the principles and techniques of biotechnology, including ethical, safety, and privacy concerns, intellectual property and patents, professional and technical communication, experimental design and analysis, and organizational leadership, all within the scope of the global biotechnology industry.

Students must complete requirements in one of the following areas of emphasis:

- Business Management (p. 1)
- Quality Assurance and Compliance (p. 1)
- Research and Development (p. 2)

Business Management

The Business Management emphasis will teach students marketing fundamentals and commercialization strategies for diverse areas of biotechnology, including pharmaceutical marketing, B2B marketing, and examine the importance of supply chain relevant to a variety of processes specific to biotechnology. Students will explore topics such as supply and distribution, sustainability, and project management within an international context. Students will also go in-depth with marketing case studies in diverse areas of biotechnology and learn how to apply Six Sigma methodologies.

Code	Title	Credits
Core Courses		18
ABT 700	Principles of Biotechnology	
ABT 705	Ethics, Safety, and Regulatory Environments in Biotechnology	
ABT 710	Professional and Technical Communication in Biotechnology	
ABT 715	Techniques in Biotechnology	
ABT 720	Experimental Design and Analysis in Biotechnology	
ABT 725	Leadership in Organizations	
Emphasis Courses		9
ABT 750	Biotechnology Marketing and Entrepreneurship	
ABT 755	Global Operations and Supply Chain Management	
ABT 760	Quality and Project Management	
Capstone		4
ABT 789	Pre-capstone	
ABT 790	Capstone	
Total Credits		31

Quality Assurance and Compliance

The Quality Assurance and Compliance emphasis is designed to teach students how to ensure quality standards are met, from discovery to production. Students will focus on quality control and validation in product design, development, and manufacturing. Examine key regulatory agencies and practices within the highly-regulated and diverse biotechnology industry. Students will learn how to read and SPO, deal with automation in QC, and navigate FDA and IDH regulations. Students will also review case studies of various biotech industries, product design, and clinical trial, and methods to ensure consumer and environmental protection.

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Core Courses		18
ABT 700	Principles of Biotechnology	
ABT 705	Ethics, Safety, and Regulatory Environments in Biotechnology	
ABT 710	Professional and Technical Communication in Biotechnology	
ABT 715	Techniques in Biotechnology	
ABT 720	Experimental Design and Analysis in Biotechnology	
ABT 725	Leadership in Organizations	
Emphasis Courses:		9
ABT 735	Quality Control and Validation	
ABT 740	Regulatory Practice and Compliance	

ABT 745	Industrial Applications in Regulatory Affairs	
Capstone		4
ABT 789	Pre-capstone	
ABT 790	Capstone	
Total Credits		31

Research and Development

Students completing the Research and Development emphasis will explore strategies in evaluating and implementing new products within diverse areas of biotechnology including agriculture, industry, medicine, and the environment. Students will learn how to evaluate specific discovery and market value, navigate patent, intellectual property, and licensing requirements, and balance business growth with innovation by applying computational methods, big data applications, and data analysis.

Code	Title	Credits
Core Courses		18
ABT 700	Principles of Biotechnology	
ABT 705	Ethics, Safety, and Regulatory Environments in Biotechnology	
ABT 710	Professional and Technical Communication in Biotechnology	
ABT 715	Techniques in Biotechnology	
ABT 720	Experimental Design and Analysis in Biotechnology	
ABT 725	Leadership in Organizations	
Required Courses		9
ABT 765	Assessing Innovation in Biotechnology	
ABT 770	Product Development	
ABT 775	Tools for Data Analysis	
Capstone		4
ABT 789	Pre-capstone	
ABT 790	Capstone	
Total Credits		31