

BIOTECHNOLOGY (MS)

Contacts

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Campus: Center City

Program Website (<https://www.jefferson.edu/academics/colleges-schools-institutes/health-professions/departments-programs/medical-laboratory-biotechnology/degrees-programs/ms-programs/biotechnology.html>)

Program Description

- STEM designated program

Biotechnology is where life sciences and technology converge. A degree in biotechnology opens up numerous employment possibilities since practically every industry utilizes biotechnology. A biotechnology degree fosters creativity, innovation, and adaptability that is applicable to most career choices. Biotechnology is one of the region's most promising, exciting and fastest-growing industries, and evolves through rapidly changing technologies, techniques and applications.

AAS

Curriculum: 1 Year, 57 Credits

- no concentration

Course	Title	Credits
First Year		
Fall		
BT 503	Molecular Prep Techniques	3
BT 510	Fundamental Molec Techniques	4
BT 605	Appld Microbial Biotechnology	3
LS 501	Molecular Biology	3
LS 504	Biochemistry	3
LS 531	Immunology	3
LS 603	Research Design	2
Credits		21
Spring		
BT 520	Cell and Tissue Culture	4
BT 525	Product Development&Management	3
BT 603	Human Genetics	3
BT 606	Intro to Bioinformatics	2
BT 610	Molecular Diagnostic Technique	4
BT 611	Protein Purification & Charact	3
Credits		19
Summer		
BT 812	Biotechnology Practicum I	3
BT 813	Biotechnology Practicum II	3
BT 814	Biotechnology Practicum III	3
BT 815	Biotechnology Practicum IV	3
BT 816	Comprehensive Exam	0
LS 610	Reg & Fis Issues in Lab. Mgmt	3
LS 803	Contemporary Topics Research	2
Credits		17
Total Credits		57

Curriculum: MS, 1 Year, 64 Credits

- Biopharmaceutical Process Development concentration

Course	Title	Credits
First Year		
Fall		
BT 503	Molecular Prep Techniques	3
BT 510	Fundamental Molec Techniques	4
BT 605	Appld Microbial Biotechnology	3
LS 501	Molecular Biology	3
LS 504	Biochemistry	3
LS 531	Immunology	3
LS 603	Research Design	2
Credits		21
Spring		
BT 520	Cell and Tissue Culture	4
BT 525	Product Development&Management	3
BT 603	Human Genetics	3
BT 606	Intro to Bioinformatics	2
BT 610	Molecular Diagnostic Technique	4
BT 611	Protein Purification & Charact	3
Credits		19
Summer		
Held at Jefferson Institute for Bioprocessing (JIB)		
BP 601	Bas Engineering for Scientists	2
BP 603	Intro to Biopharm Processing	2
BP 604	Intro to Downstream Unit Oper	4
BP 605	Intro to Upstream Unit Oper	4
BT 812	Biotechnology Practicum I	3
BT 813	Biotechnology Practicum II	3
BT 814	Biotechnology Practicum III	3
BT 815	Biotechnology Practicum IV	3
BT 816	Comprehensive Exam	0
Credits		24
Total Credits		64

Curriculum: MS, 2 Years, 57 Credits

Course	Title	Credits
First Year		
Fall		
BT 503	Molecular Prep Techniques	3
BT 510	Fundamental Molec Techniques	4
BT 605	Appld Microbial Biotechnology	3
LS 501	Molecular Biology	3
LS 504	Biochemistry	3
Credits		16
Spring		
BT 520	Cell and Tissue Culture	4
BT 603	Human Genetics	3
BT 606	Intro to Bioinformatics	2
BT 610	Molecular Diagnostic Technique	4
BT 611	Protein Purification & Charact	3
Credits		16
Second Year		
Fall		
BT 812	Biotechnology Practicum I	3
BT 813	Biotechnology Practicum II	3
MT 531	Immunology	3
LS 603	Research Design	2

Course	Title	Credits
LS 804	Experimental Research I ¹	1
Credits		12
Spring		
BT 525	Product Development&Management	3
BT 814	Biotechnology Practicum III	3
BT 815	Biotechnology Practicum IV	3
BT 816	Comprehensive Exam	0
LS 610	Reg & Fis Issues in Lab. Mgmt	3
Select one of the following:		1-2
LS 803	Contemporary Topics Research ¹	
LS 805	Experimental Research II ¹	
Credits		13-14
Total Credits		57-58

¹ To meet the research requirement, students may take a classroom literature review-based course (LS 803 Contemporary Topics Research) or, under special circumstances, engage in a two-semester wet bench research project with a selected PI (LS 804 Experimental Research I and LS 805 Experimental Research II). Students must meet with their faculty advisor and/or program director to determine which option best meets their educational goals. LS 804 Experimental Research I and LS 805 Experimental Research II are not a substitute for nor may run concurrently with practica courses.

Curriculum: Advanced MS, 2-year, 33 credits

Course	Title	Credits
First Year		
Fall		
BT 605	Appld Microbial Biotechnology	3
BT 812	Biotechnology Practicum I	3
LS 603	Research Design	2
Credits		8
Spring		
BT 603	Human Genetics	3
BT 813	Biotechnology Practicum II	3
Credits		6
Summer		
LS 610	Reg & Fis Issues in Lab. Mgmt	3
BT 814	Biotechnology Practicum III	3
Credits		6
Second Year		
Fall		
BT 815	Biotechnology Practicum IV	3
LS 504	Biochemistry (approval required)	3
LS 804	Experimental Research I ((approval required))	1
Credits		7
Spring		
BT 525	Product Development&Management	3
MLSO 606	Bioinformatics	2
LS 803	Contemporary Topics Research	2
LS 805	Experimental Research II (approval required)	1
Credits		8
Total Credits		35

To meet the research requirement, students may take a classroom literature review-based course (LS 803) or, under special circumstances, engage in a two-semester wet bench research project with a selected PI (LS 804 and LS 805). Students must meet with their faculty advisor

and/or program director to determine which option best meets their educational goals. LS 804 and LS 805 are not a substitute for nor may run concurrently with practica courses.

Curriculum: Advanced MS, One Year, 33 credits

Course	Title	Credits
First Year		
Fall		
BT 605	Appld Microbial Biotechnology	3
BT 812	Biotechnology Practicum I	3
BT 813	Biotechnology Practicum II	3
LS 504	Biochemistry	3
LS 603	Research Design	2
LS 804	Experimental Research I ((approval required))	1
Credits		15
Spring		
BT 525	Product Development&Management	3
BT 603	Human Genetics	3
BT 606	Intro to Bioinformatics	2
BT 814	Biotechnology Practicum III	3
BT 815	Biotechnology Practicum IV	3
LS 610	Reg & Fis Issues in Lab. Mgmt	3
LS 803	Contemporary Topics Research	2
LS 805	Experimental Research II (approval required)	1
Credits		20
Total Credits		35