

## Biotechnology Graduate Programs Curriculum

### Prerequisites and Curriculum for graduate programs

You must earn a grade of 'C' or better in each prerequisite course

<b>Prerequisite Courses for Entry-Level BS/MS and Masters</b>			
<b>Course Distribution</b>	<b>3+2 Entry-Level BS/MS Program</b>	<b>Professional Masters</b>	<b>Advanced Masters</b>
Biological or Chemical Sciences <sup>1</sup>	20	20	
Organic Chemistry	4	4	
College Algebra, Trigonometry, Precalculus, Calculus or Statistics	3*	3*	
English	6	6	
Electives <sup>2</sup>	49		
<b>Total</b>	<b>82</b>	<b>33**</b>	<b>***</b>

<sup>1</sup>Suggested biological or chemical sciences courses include but are not limited to General Biology, General Chemistry and Anatomy & Physiology. <sup>2</sup>A course in Statistics, Physics, Bioinformatics or similar coursework is recommended. \*Applicants to the Entry-Level BS/MS or the Masters programs should take Statistics. \*\*Credits may be part of or in addition to an earned bachelors degree from an accredited institution. \*\*\*Applicants to the Advanced MS program must have a previously earned BS degree or Post-baccalaureate Certificate in Biotechnology, Cytotechnology, Medical Technology or other approved laboratory discipline.

NOTE: Graduates of associate degree MLT, CLT, BT or other similar programs may transfer technician coursework credits to satisfy the biological/chemical sciences and elective prerequisites.

### **Entry-Level BS/MS Program in Biotechnology/Applied Molecular Technologies**

(full-time, 2 year baccalaureate and entry-level master's degree program for students entering with 82 specific prerequisite credits)

FALL SEMESTER	<i>Semester Credits</i>
LS 301 Molecular Biology	3
LS 303 Fundamental Clinical and Experimental Techniques	3
CH 304 Biochemistry	3
BT 303 Molecular Preparatory Techniques	1
BT 310 Basic Molecular Techniques	4
BT 405 Microbial Genetics	3
MT 331 Immunology	3

	Total for semester	20
<b>SPRING SEMESTER</b>		
BT 411	Protein Purification and Characterization	3
BT 320	Cell and Tissue Culture	4
LS 440	Current Research in the Biosciences	3
BT 403	Human Genetics	3
BT 410	Molecular Diagnostic Techniques	4
BT 401	Systems Biology	2
	Total for semester	19

Students who achieve a grade-point average of 3.0 or higher at the completion of two semesters of undergraduate coursework are admitted to the graduate phase of the program.

*Graduate Phase*

<b>FALL SEMESTER</b>		
	Concentration Electives	6
LS 603	Research Design	3
LS 640	Methods in Bioscience Education	3
LS 801	Research Project I	1
LS 812	Practicum I	2
LS 813	Practicum II	2
	Total for semester	17

<b>SPRING SEMESTER</b>		
<b>LS 613</b>	Pathology	2
LS 610	Regulatory + Fiscal Issues in Laboratory Management	3
LS 802	Research Project II	2
LS 814	Practicum III	2
LS 815	Practicum IV	2
<b>LS 816</b>	Comprehensive Examination	1
	Concentration Elective	3
	Total for semester	15

**Credit Summary for 3+1 Baccalaureate Degree Option**

	Credits Required for Admission	82
	Undergraduate Phase Credits	39
	Graduate Phase Credits	32
	Total Credits for BS/MS in Bioscience Technologies - Biotechnology/Molecular Sciences Option	153

***Professional Master's Degree***

(full-time, 12-month program for students who hold a bachelor's degree in any field other than laboratory sciences)

FALL SEMESTER	<i>Semester Credits</i>
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LS 501	Molecular Biology	3
LS 603	Research Design	3
CH 504	Biochemistry	3
BT 503	Molecular Preparatory Techniques	1
BT 510	Basic Molecular Techniques	4
BT 605	Microbial Genetics	3
MT 531	Immunology	3
	Total Credits	<u>20</u>
SPRING SEMESTER		
BT 611	Protein Purification and Characterization	3
BT 520	Cell and Tissue Culture	4
BT 603	Human Genetics	3
BT 610	Molecular Diagnostic Techniques	4
BT 601	Systems Biology	2
LS 613	Pathology	2
LS 801	Research Project I	1
	Total Credits	<u>19</u>
SUMMER I & II		
LS 610	Regulatory + Fiscal Issues in Laboratory Management	3
LS 802	Research Project II	2
LS 812	Practicum I	2
LS 813	Practicum II	2
LS 814	Practicum III	2
LS 815	Practicum IV	2
LS 816	Comprehensive Examination	1
	Total Credits	<u>14</u>
	Total Credits for Professional MS in Bioscience Technologies	<u>53</u>

### **Advanced Master's Degree in Bioscience Technologies**

(full-time or part-time program for students who hold a bachelor's degree and/or certification in Biotechnology, Cytogenetic Technology, Cytotechnology or Medical Technology or other approved laboratory discipline)

#### **Full-Time Option**

		<i>Semester Credits</i>
FALL SEMESTER		
LS 603	Research Design	3
LS 640	Methods in Bioscience Education	3
LS 801	Research Project I	1
LS 812	Practicum I	2
LS 813	Practicum II	2
CH 504	Biochemistry	3
	Concentration Elective	3
	Total Credits	<u>17</u>

SPRING SEMESTER		
LS 610	Regulatory and Fiscal Issues in Laboratory Management	3
LS 613	Pathology	2
LS 699	Independent Study (Teaching Internship)	2
LS 802	Research Project II	2
LS 814	Practicum III	2
LS 815	Practicum IV	2
	Concentration Elective	2-3
		15 or
	Total Credits	16
		32 or
	Total Credits for Advanced MS in Bioscience Technologies	33

**Curriculum – Part-Time Option (Suggested)**

		<i>Semester Credits</i>
FALL SEMESTER		
LS 603	Research Design	3
LS 812	Practicum I	2
CH 504	Biochemistry	3
	Total Credits	8
SPRING SEMESTER		
LS 610	Regulatory and Fiscal Issues in Laboratory Management	3
LS 613	Pathology	2
LS 813	Practicum II	2
	Total Credits	7
SUMMER I and/or II		
LS 814	Practicum III	2
	Concentration Elective	3
	Total Credits	5
FALL SEMESTER		
LS 640	Methods in Bioscience Education	3
LS 699	Independent Study (Teaching Internship)	2
LS 801	Research Project I	1
LS 815	Practicum IV	2
	Total Credits	8
SPRING SEMESTER		
LS 802	Research Project II	2
	Concentration Elective(s)	2-3
	Total Credits	4 or 5
		32 or
	Total Credits for Advanced MS in Bioscience Technologies	33