



**Cecil College and Jefferson College of Health Professions at Thomas Jefferson University**

**Bachelor of Science and Master of Science**

**Concentration in Biopharmaceutical Process Development**

**Two-year Option (3+2)**

<b>Fall Semester (Year 1)</b>		
<b>Code</b>	<b>Course Name</b>	<b>Credits</b>
BT 303	Molecular Preparatory Techniques	3
BT 310	Fundamental Molecular Techniques	4
BT 405	Applied Microbial Biotechnology	3
LS 301	Molecular Biology	3
LS 304	Biochemistry	3
LS 305	Survey of Biotechnology Applications	3
<b>Total Semester Credits</b>		<b>19</b>

<b>Spring Semester (Year 1)</b>		
<b>Code</b>	<b>Course Name</b>	<b>Credits</b>
BT 320	Cell and Tissue Culture Techniques	4
BT 406	Introduction to Bioinformatics	2
BT 410	Molecular Diagnostic Techniques	4
BT 411	Protein Purification and Characterization	3
BT 603	Human Genetics	3
LS 540	Current Research in the Biosciences	3
<b>Total Semester Credits</b>		<b>19</b>

<b>Summer Semester</b>		
<b>Code</b>	<b>Course Name</b>	<b>Credits</b>
BP 401	Basic Engineering for Scientists	2
BP 403	Introduction to Biopharmaceutical Processing	2
BP 404	Introduction to Downstream Unit Operations	4
BP 405	Introduction to Upstream Unit Operations	4
<b>Total Semester Credits</b>		<b>12</b>

### **Summer Semester (Optional)**

- Biotechnology Skill Building Discussion Group

<b>Fall Semester (Year 2)</b>		
<b>Code</b>	<b>Course Name</b>	<b>Credits</b>
BT 812	Biotechnology Practicum I	3
BT 813	Biotechnology Practicum II	3
LS 531	Immunology	3
LS 603	Research Design	2
LS 804*	Experimental Research I	1
<b>Total Semester Credits</b>		<b>11-12</b>

<b>Spring Semester (Year 2)</b>		
<b>Code</b>	<b>Course Name</b>	<b>Credits</b>
BT 814	Biotechnology Practicum III	3
BT 815	Biotechnology Practicum IV	3
BT 325	Product Development & Management	3
LS 803*	Contemporary Topics Research	2
LS 805*	Experimental Research II	1
LS 816	Comprehensive Examination	0
<b>Total Semester Credits</b>		<b>12</b>

\* To meet the research requirements, students may take a classroom literature review-based course (LS 803) or 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 clinical practica courses nor may run concurrently with practica courses.

**TOTAL:**

<b>Credits Required for Admission</b>	<b>82</b>
<b>Undergraduate Credits-Year One</b>	<b>38</b>
<b>Graduate Credits-Summer</b>	<b>12</b>
<b>Graduate Credits-Year Two</b>	<b>22</b>
<b>Total Credits to Degree (minimum)</b>	<b>154</b>