Students in the MS Bioprocessing program are required to complete a minimum of 66 units over the course of two years of study.

A summary of the MS Bioprocessing curriculum is as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biopharmaceutical Processing</td>
<td>27.0</td>
</tr>
<tr>
<td>Research Capstone Project</td>
<td>12.0</td>
</tr>
<tr>
<td>Quality &amp; Regulatory</td>
<td>6.0</td>
</tr>
<tr>
<td>Other courses</td>
<td>21.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>66.0 units</strong></td>
</tr>
</tbody>
</table>

**Core Courses:** All students must complete the core courses in order to complete the MS Bioprocessing degree.

### 1st Year FALL Core Courses (Incoming students with Science Degrees) - Units
- MEB 301 Mathematics for Scientists: 1.5
- MEB 323 Fluid Flow, Heat and Mass Transfer: 3.0
- MEB 304 Molecular Biology and Biotechnology: 1.5
- MEB 306 Bioprocessing Fundamental Laboratory: 1.5
- MEB 312 Principles of Bioprocess Engineering: 1.5
- MEB 317 CMC Regulatory and Quality: 3.0
- MEB 362 Mammalian Cell Culture LAB: 1.5
- ALS/MEB 350 Financial Accounting: 1.5
- **Subtotal**: 15.0

### 1st Year FALL Core Courses (Incoming students with Engineering Degrees) - Units
- MEB 305 Introduction to Bioprocess Fundamentals: 1.5
- MEB 307 Introduction to Biology and Biochemistry: 3.0
- MEB 304 Molecular Biology and Biotechnology: 1.5
- MEB 306 Bioprocessing Fundamental Laboratory: 1.5
- MEB 312 Principles of Bioprocess Engineering: 1.5
- MEB 317 CMC Regulatory and Quality: 3.0
- MEB 362 Mammalian Cell Culture LAB: 1.5
- ALS/MEB 350 Financial Accounting: 1.5
- **Subtotal**: 15.0

### 1st Year SPRING Core Courses (For All Students: Scientists and Engineers) - Units
- MEB 302 Principles of Bioreaction Engineering: 1.5
- MEB 303 Molecular Basis of Disease: 1.5
- MEB 310 Advanced Mammalian Cell Culture Engineering: 1.5
- MEB 311 Bioseparation Engineering Science: 1.5
- MEB 313 Advanced Principles of Bioprocess Engineering: 1.5
- MEB 315 Downstream processing Lab: 3.0
- MEB 360 Advanced Fundamental Microbial Fermentation: 1.5
- MEB 361 Microbial Fermentation Lab: 1.5
- ALS/MEB 351 Corporate Finance: 3.0
- **Subtotal**: 16.5
KGI Henry E. Riggs School of Applied Life Sciences
Graduation Requirements
Class of 202?
Master of Science in Bioprocessing Research and Development

2nd Year FALL Core Courses
(For All Students: Scientists and Engineers) | Units
--- | ---
MEB 403 Chemistry, Manufacturing & Controls Regulation of Biologics | 1.5
MEB 495 Bioprocessing Research and Development (BR&D) Capstone Project | 6.0
MEB 410 Principles of Bioprocess Engineering Design and Practice | 1.5
MEB 429 Bioseparations Engineering | 1.5
ALS/MEB 341 Healthcare and Life Sciences Industry Ethics | 1.5
ALS/MEB 359 Introduction to Bioscience Industry | 3.0
**Subtotal** | **13.5**

2nd Year SPRING Core Courses
(For All Students: Scientists and Engineers) | Units
--- | ---
MEB 404 Emerging Therapeutics (Stem cells, Gene Therapy, Tissue Engineering etc.) | 3.0
MEB 495 Bioprocessing Research and Development (BR&D) Capstone Project | 6.0
MEB 409 Current Issues for FDA Regulated Products | 1.5
**ALS ### Elective* | 3.0
**Subtotal** | **13.5**

* ALS Elective (3.0 Units) – Business or Technical Elective

**Options and Elective Courses:** All MEng students may also choose Option and Elective Courses below:

<table>
<thead>
<tr>
<th>Options and Elective Courses</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEB 318 Study Abroad</td>
<td>6.0</td>
</tr>
<tr>
<td>MEB 319 Paid Internship (400 hours)</td>
<td>0.0</td>
</tr>
<tr>
<td>MEB 319 Non-Paid Internship (400 hours)</td>
<td>6.0</td>
</tr>
<tr>
<td>MEB 321 Research Project</td>
<td>0.0 - 6.0</td>
</tr>
<tr>
<td>ALS/MEB 497 Independent Study</td>
<td>3.0</td>
</tr>
<tr>
<td>ALS/MEB 428 Advanced Bioprocessing Research</td>
<td>1.5 - 3.0</td>
</tr>
<tr>
<td>ALS/MEB 400 Team Masters’ Project</td>
<td>3.0</td>
</tr>
</tbody>
</table>

**Academic Petitions:** Examples of requests include, but are not limited to, the following:

- Course overload: permission to take more than 19.5 units
- Exceptions to registration deadlines (late ADDs, late DROPs)
- Variances in cross registration and general education requirements
- Exceptions to graduation requirements or other KGI academic policies