

## Class of 2024 Graduation Requirements

# Master of Engineering in Biopharmaceutical Processing (MEng)

Students in the MEng program are required to complete a minimum of **60 Credits** over the course of two years of study.

- Biopharmaceutical Processing (15 credits)
- Biopharmaceutical Processing Labs (7.5 credits)
- Biopharmaceutical Capstone - Team Design Project (12 credits)
- Quality and Regulatory (4.5 credits)
- Other Business, Science courses (21 credits)

Students are also required to complete a 400-hour, paid, industry internship in the summer following their first year, and present an internship poster reviewed by KGI faculty

### Program Requirements

| Fall 1 <sup>st</sup> Year Courses                     | Credits     |
|---|-------------|
| ENG 5153 Engineering Fundamentals for Bioprocessing** | 3           |
| SCI 5500 Introduction to Biology and Biochemistry*    | 3           |
| ENG 5100 Bioprocess Engineering Principles            | 1.5         |
| ENG 5120 Microbial Fermentation                       | 1.5         |
| ENG 5121 Microbial Fermentation LAB                   | 1.5         |
| ENG 5151 Vector & Strain Design LAB                   | 1.5         |
| SCI 5200 Molecular Biology and Biotechnology          | 1.5         |
| BUS 5000 Introduction to Bioscience Industry          | 3           |
| PDEV 5000 Team Master's Project                       | 3           |
| <b>Subtotal</b>                                       | <b>16.5</b> |

| Spring 1 <sup>st</sup> year Courses                     | Credits     |
|---|-------------|
| ENG 5130 Mammalian Cell Biotechnology                   | 1.5         |
| ENG 5131 Mammalian Cell Culture LAB                     | 1.5         |
| ENG 5140 Bioseparations Engineering and Science         | 1.5         |
| ENG 5141 Introduction to Bioseparations Engineering Lab | 1.5         |
| ENG 5142 Advanced Bioseparations Engineering Lab        | 1.5         |
| MATH 5210 Data Analytics for Bioprocessing              | 3           |
| REG 5310 Quality Systems and Regulation for Biologics   | 1.5         |
| SCI 6311 Cell-Produced Therapeutics                     | 1.5         |
| PDEV 5000 Team Master's Project                         | 3           |
| <b>Subtotal</b>   | <b>16.5</b> |

\* Requirement for students with ENG background (assigned by MEng Program Director based on transcript)

\*\* Requirement for students with SCI background (assigned by MEng Program Director based on transcript)



## Program Requirements

| Fall 2 <sup>nd</sup> Year Courses   | Credits          |
|---|------------------|
| ENG 6100 Team Design Project (TDP)  | 6                |
| ENG 6140 Advanced Bioseparations Engineering  | 1.5              |
| REG 6310 Advanced Quality Topics for Biologics  | 1.5              |
| BUS 5100 Financial Accounting   | 1.5              |
| ENG/MATH/SCI ###<br>Technical Elective (Can be opted either in Fall and/or in Spring semesters)           | 0-1.5            |
| BUS #### Elective (Can be opted either in Fall and/or in Spring semesters – total 3 credits) <sup>§</sup> | 0-3 <sup>§</sup> |
| <b>Subtotal</b>   | <b>12.0-15.0</b> |

| Spring 2 <sup>nd</sup> Year Courses   | Credits          |
|---|------------------|
| ENG 6100 Team Design Project (TDP)  | 6                |
| ENG 6152 Bioprocessing for Emerging Therapeutics  | 1.5              |
| REG 6320 Advanced Regulatory Topics for Biologics   | 1.5              |
| BUS 6110 Bioprocess Economics   | 1.5              |
| ENG/MATH/SCI ###<br>Technical Elective (Can be opted either in Fall and/or in Spring semesters)           | 0-1.5            |
| BUS #### Elective (Can be opted either in Fall and/or in Spring semesters – total 3 credits) <sup>§</sup> | 0-3 <sup>§</sup> |
| PDEV 5220 Healthcare and Life Sciences Industry Ethics  | 1.5              |
| <b>Subtotal</b>   | <b>13.5-16.5</b> |

<sup>§</sup> All MEng students must complete Business Elective Courses worth 3 credits from list below in Fall and/or Spring semester. Waiver from MEng Program Director required outside this list.

| 2nd Year BUS ELECTIVES                               | Credits |
|--|---------|
| BUS 6710 Building an Entrepreneurial Organization    | 2       |
| BUS 6410 Leadership in Organizations                 | 1.5     |
| BUS 6400 Organizational Behavior                     | 3       |
| BUS 6600 Business Operations                         | 3       |
| BUS 6500 Marketing Management                        | 3       |
| BUS 6610 Supply Chain Biotech Operations             | 3       |
| BUS 6730 Applied Entrepreneurship                    | 3       |
| BUS 6120 Valuation in the Life Sciences <sup>¶</sup> | 1.5     |
| BUS 6220 Drug Pricing and Reimbursement <sup>¶</sup> | 1.5     |
| BUS 6330 Intellectual Property Strategy <sup>¶</sup> | 1.5     |
| MATH 6510 Market Analytics <sup>¶</sup>              | 1.5     |

(<sup>¶</sup>) Pre-requisites not part of MEng curriculum  
Contact instructor for approval prior to registration

**Optional Courses:** All MEng students may also choose Optional Courses from below

| Optional Courses                         | Credits |
|--|---------|
| RES 6000 Advanced Bioprocessing Research | 1.5-3   |
| RES 6000 Independent Research            | 1.5-3   |
| RES 6010 Independent Study               | 3       |
| PDEV 5000 Team Masters' Project          | 3       |