

## Degree Pathway

### A.S. in Biotechnology leading to a B.S. in Biotechnology at York College (Dual/Joint Degree Program) – Catalog Year 2023-24

The number of credits you take each year will determine when you graduate. To graduate on time, you are strongly encouraged to enroll in at least 30 credits toward your degree during the calendar year, including fall and spring semesters and winter and summer sessions. This Degree Pathway is designed for students who place into **MA-119**. Additional Degree Pathways are available for biotechnology students who place into other levels of mathematics. Please see the degree website or your advisor for more information.

Courses in **Bold Text** are prerequisites for later courses or only offered in the Fall or Spring semester and should be taken where indicated in the sequence.

#### Fall Semester #1 – Queensborough Community College

| Courses  | Credits   | Prerequisites and Corequisites <sup>1</sup>                               |
|--|-----------|---|
| <b>ENGL-101 English Composition I</b><br>(Required Core 1A - English Composition)            | 3         | Prerequisite: Complete developmental requirements in English or placement |
| <b>MA-119 College Algebra</b>  | 3         | Prerequisite: Complete developmental requirements in math or placement    |
| <b>MA-121 Trigonometry</b>   | 1         | Corequisite: MA-119   |
| <b>BI-201 General Biology I<sup>2</sup></b><br>(Required Core 1C – Life & Physical Sciences) | 4         | Prerequisite: Complete developmental requirements in English              |
| SP-211 Speech Communication (Required for major)   | 3         | None  |
| One credit course in PE-400, PE-500, or DAN-100 series                                       | 1         | Check individual courses for prerequisites and corequisites               |
| <b>Total credits for the term</b>  | <b>15</b> |   |

#### Spring Semester #1 – Queensborough Community College

| Courses   | Credits   | Prerequisites and Corequisites <sup>1</sup>           |
|---|-----------|---|
| ENGL-102 English Composition II<br>(Required Core 1A - English Composition) | 3         | Prerequisite: ENGL-101 or placement                   |
| <b>MA-440 Pre-Calculus Mathematics</b>                                      | 4         | Prerequisites: MA-119 and MA-121 (C or better)        |
| BI-202 General Biology II (Required for major)                              | 4         | Prerequisite: BI-201                                  |
| BI-357 Bioinformatics / Computational Biology (Required for major)          | 3         | Prerequisite: BI-201 and permission of the instructor |
| <b>Total credits for the term</b>   | <b>14</b> |   |

## Summer Session #1 – Queensborough Community College

| Courses   | Credits    | Prerequisites and Corequisites <sup>1</sup>  |
|---|------------|--|
| CH-151 General Chemistry I <sup>2</sup> (Flexible Core 2E – Scientific World) | 4.5        | Prerequisite: MA-119 and MA-121 or placement |
| HE-102 Health, Behavior & Society   | 2          | None   |
| <b>Total credits for the session</b>  | <b>6.5</b> |  |

## Fall Semester #2 – Queensborough Community College

| Courses  | Credits     | Prerequisites and Corequisites <sup>1</sup>                 |
|--|-------------|---|
| MA-441 Analytic Geometry and Calculus I <sup>2</sup><br>(Required Core 1B - Mathematical & Quantitative Reasoning) | 4           | Prerequisite: MA-440 (C or better)                          |
| BI-453 Biotechnology (Required for major)  | 5           | Prerequisite: BI-201 (C or better)                          |
| CH-152 General Chemistry II <sup>2</sup> (Additional Flexible Core Course)   | 4.5         | Prerequisite: CH-151  |
| One course from Flexible Core 2A, 2B, 2C, or 2D <sup>3</sup>   | 3           | Check individual courses for prerequisites and corequisites |
| <b>Total credits for the term</b>  | <b>16.5</b> |   |

## Spring Semester #2 – Queensborough Community College

| Courses  | Credits   | Prerequisites and Corequisites <sup>1</sup>                 |
|--|-----------|---|
| BI-356 Genetics (Required for major)                         | 4         | Prerequisite: BI-201 (C or better)                          |
| BI-554 Research Laboratory Internship (Required for major)   | 2         | Prerequisite: BI-201 and permission of the instructor       |
| One course from Flexible Core 2A, 2B, 2C, or 2D <sup>3</sup> | 3         | Check individual courses for prerequisites and corequisites |
| One course from Flexible Core 2A, 2B, 2C, or 2D <sup>3</sup> | 3         | Check individual courses for prerequisites and corequisites |
| One course from Flexible Core 2A, 2B, 2C, or 2D <sup>3</sup> | 3         | Check individual courses for prerequisites and corequisites |
| <b>Total credits for the term</b>                            | <b>15</b> |   |
| <b>Total credits required for the A.S. degree</b>            | <b>67</b> |   |

## Notes:

1. Prerequisites for a course must be passed before taking the course. Corequisites must be passed before taking the course or taken in the same term as the course.
2. Students are required to take specific courses in some areas of the Common Core that fulfill both general education and major requirements. If students do not take the required courses in the Common Core, they will have to take additional credits to complete their degree requirements.
3. Students must complete one course from each of the Flexible Core categories (2A, 2B, 2C, 2D, and 2E) and one additional course from any one of the categories. The course from Flexible Core 2E is required to be CH-151 and the additional flexible core course is required to be CH-152.

All students must complete two (2) WI designated classes to fulfill degree requirements.

The following courses must be completed after transfer to York College to earn the B.S. in Biotechnology degree:

#### Fall Semester #3 – York College

| Courses  | Credits   | Prerequisites <sup>1</sup> and Corequisites             |
|--|-----------|---|
| <b>CHEM231 Organic Chemistry I</b>               | 4         | Prerequisite: CHEM111                                   |
| <b>CHEM232 Techniques in Organic Chemistry I</b> | 3         | Prerequisite: CHEM112<br>Corequisite: CHEM231           |
| PHYS115 College Physics I                        | 4         | Prerequisite: MATH120<br>Corequisite: PHYS113           |
| PHYS113 Physics Laboratory I                     | 1         | Corequisite: PHYS113 or PHYS117                         |
| College Option Writing Intensive Course          | 3         | Check individual course prerequisites and co-requisites |
| <b>Total credits for the term</b>                | <b>15</b> |   |

#### Spring Semester #3 – York College

| Courses  | Credits   | Prerequisites <sup>1</sup> and Corequisites                            |
|--|-----------|--|
| <b>CHEM233 Organic Chemistry II</b>                                | 3         | Prerequisite: CHEM231  |
| <b>BIO412 Biochemistry or CHEM412 Biochemistry</b>                 | 3         | Prerequisites: BIO 202, CHEM 231 and CHEM 232 or CHEM 230 and CHEM 235 |
| BTEC302 Theory and Methods in Biotechnology and Biopharmaceuticals | 4         | Prerequisites: BIO301 and CHEM231                                      |
| PHYS116 College Physics II   | 4         | Prerequisites: PHYS115 or PHYS117                                      |
| PHYS114 Physics Laboratory II                                      | 1         | Corequisites: PHYS116 or PHYS118                                       |
| <b>Total credits for the term</b>                                  | <b>15</b> |  |

#### Fall Semester #4 – York College

| Courses   | Credits   | Prerequisites <sup>1</sup> and Corequisites             |
|---|-----------|---|
| BTEC480 Theory and Experimentation in Biotechnology | 5         | Prerequisites: BIO 301 and BIO 412 or CHEM 412.         |
| College Option Writing Intensive Course             | 3         | Check individual course prerequisites and co-requisites |
| Free Elective Courses                               | 6         | Check individual course prerequisites and co-requisites |
| <b>Total credits for the term</b>                   | <b>14</b> |   |

## Spring Semester #4 – York College

| <b>Courses</b>                                    | <b>Credits</b> | <b>Prerequisites<sup>1</sup> and Corequisites</b>       |
|---|----------------|---|
| BTEC489 Special Topics in Biotechnology           | 3              | Prerequisite: BIO301                                    |
| Major Elective Courses                            | 3.5-5.5        | Check individual course prerequisites and co-requisites |
| Free Elective Courses                             | 7.5-9.5        | Check individual course prerequisites and co-requisites |
| <b>Total credits for the term</b>                 | <b>16</b>      |   |
| <b>Total credits required for the B.S. degree</b> | <b>60</b>      |   |

 Major Elective Courses – York College – Choose 3.5 to 5.5 credits from the following<sup>2</sup>:

| <b>Courses</b>                                      | <b>Credits</b> | <b>Prerequisites<sup>1</sup> and Corequisites</b>            |
|---|----------------|--|
| BIO307 Biostatistics                                | 3              | Corequisite: BIO201  |
| BIO320 Cell Biology                                 | 4.5            | Prerequisite: BIO201   |
| BIO415 Biochemistry and Molecular Biology           | 2              | Corequisite: BIO 412 or CHEM 412                             |
| BIO452 Developmental Biology                        | 4.5            | Prerequisites: BIO 301, CHEM 231 or CHEM 230                 |
| BIO465 Microbiology                                 | 4.5            | Prerequisites: BIO 301, CHEM 230 and 235 or CHEM 231 and 232 |
| BIO466 Immunology                                   | 4.5            | Prerequisites: BIO 301, CHEM 230 and 235 or CHEM 231 and 232 |
| BTECH350 Computational Biology and Molecular Design | 4              | Prerequisites: BIO 301, CHEM 233, MATH 121                   |

## Notes:

1. Many of the prerequisites for courses required to be taken at York College were taken at QCC.
2. This credit total assumes that BI-356 Genetics (4 credits) was taken at QCC. Students who do not take BI-356 at QCC must complete 5.5 to 9.5 credits of Major Elective Courses at York College and may elect to take BIO444 Genetics (4 credits) as one of those courses.