**2019-2020**

**Degree Map:** [**Pharmaceutical Science (BS)**](https://www.york.cuny.edu/produce-and-print/contents/bulletin/school-of-arts-and-sciences/chemistry/pharmaceutical-sciences-bs)

Department of Chemistry

School of Arts & Sciences | York College | CUNY

Academic Core 3F01 | 718-262-2653

The following is a **suggested** plan of study for completion of this degree program.

The goal of a Degree Map is to ensure that students graduate with no more than 120 credits and in four years.

* All students should speak with an academic advisor about their academic programs.

**This document is not a substitute for academic advisement.**

* Students are encouraged to take Winter and Summer courses to facilitate their progress towards graduation.
* Transfer students do not need to take all courses in the plan; they should consult with an academic advisor.

| Course | Credit | Course | Credit |
| --- | --- | --- | --- |
| **FIRST YEAR - FALL** | **16** | **FIRST YEAR - SPRING** | **16** |
| English Composition (EC): ENG 125 | 3 | English Composition (EC): ENG 126 | 3 |
| Mathematical & Quantitative Reasoning (MQR): MATH 121 | 4 | MATH 122 | 4 |
| BIO 201 | 4 | CHEM 111 + CHEM 112 | 5 |
| Scientific World (SW):  CHEM 108 + CHEM 109 | 5 | BIO 202 | 4 |

| Course | Credit | Course | Credit |
| --- | --- | --- | --- |
| **SECOND YEAR - FALL** | **14** | **SECOND YEAR - SPRING** | **13** |
| CHEM 231 | 3 | Creative Expression (CE)‡ | 3 |
| CHEM 232 | 2 | CHEM 233 | 3 |
| BIO 301 (WI) | 4 | CHEM 234 | 2 |
| Life & Physical Science (LPS):  PHYS 117 + PHYS 113 | 5 | Additional Flexible Core Course:  PHYS 118 + PHYS 114 (SW) | 5 |

| Course | Credit | Course | Credit |
| --- | --- | --- | --- |
| **THIRD YEAR - FALL** | **15** | **THIRD YEAR - SPRING** | **15** |
| US Experience in its Diversity (USED)‡ | 3 | World Culture & Global Issues (WCGI)‡ | 3 |
| CHEM 321 | 3 | CHEM 323 | 3 |
| CHEM 341 | 3 | CHEM 342 or CHEM 462 (WI) | 3 |
| CHEM 460 | 3 | Writing Intensive (WI) - Recommended  PHS 480 WI or PHS 490 WI (PHS  Elective) | 3 |
| PHS 300 | 3 | PHS 301 | 3 |

| Course | Credit | Course | Credit |
| --- | --- | --- | --- |
| **FOURTH YEAR - FALL** | **16** | **FOURTH YEAR - SPRING** | **15** |
| College Option: Writing Requirement | 3 | Individual & Society (IS)‡ | 3 |
| College Option: Foreign Language† | 3 | College Option: Foreign Language† | 3 |
| PHS 350 | 3 | College Option: HE 111 | 3 |
| PHS 401 | 3 | PHS Elective | 3 |
| PHS Elective | 4 | PHS Elective | 3 |

* York students are required to complete (pass) three (3) Writing intensive (WI) courses: two (2) in the lower division (100-200 level) and one (1) in the upper division (300-level).
* If you transferred to York College with credit for General Education requirements, you must still complete one (1) WI course in the upper division within your major. If your major has no upper division WI course, you must take a WI course chosen in consultation with your major advisor.
* B.S. students must complete 60 credits of liberal arts – See Bulletin.
* Students are strongly encouraged to select a Minor program of study, in consultation with an academic advisor, especially those planning to attend graduate school. Minor courses would replace the “free electives” in the Degree Map.

†Foreign language courses are determined through placement by the Foreign Language Department, AC-3C08

‡The Chemistry Department recommends students take Writing-Intensive courses within the Flexible Core requirements.

If not WI, two additional WI courses must be taken in place of free electives before graduation.

**NOTES:**

1. Students that do not place directly into MATH 121 may need to take up to 8 credits of MATH prerequisites, MATH 120 (4 credits) and/or MATH 102 (1 credit) or MATH 104 (3 credits) or MATH 115 (4 credits)
2. The following electives are recommended for students intending to pursue a Doctorate in Pharmacy: BIO 234, BIO 235, BIO 465, PHS 490.
3. Students intending to focus on pharmaceutical research and development should choose some of the following electives: CHEM 310, CHEM 360, CHEM 322, CHEM 330, CHEM 421, CHEM 450, CHEM 461, PHS 480, PHS 481.
4. The following electives are recommended for students intending to focus on pharmaceutical regulation: BIO 307, BIO 465, PHS 360, PHS 490, PHS 491.
5. Credits for MATH 102, MATH 104, and MATH 115 will not be counted toward major electives for students placed into MATH 120 or MATH 121.
6. Credits for MATH 120 will not be counted toward major electives for students placed into MATH 121.

**Program Elective Courses**

Choose 9-12.5 credits from among the following under advisement of the department:

| **Course** | **Title** | **Credit** | **Prerequisite** | **Pathways** |
| --- | --- | --- | --- | --- |
| [BIO234](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/BIO/BIO234) | Anatomy and Physiology I | 4 | Coreq: CHEM 106 & 107, or CHEM 108 & 109, or CHEM 101 or CHEM 105; BIO 234L | FC – SW |
| [BIO235](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/BIO/BIO235) | Anatomy and Physiology II | 4 | BIO 234 / Coreq: BIO 235L | FC – SW |
| [BIO307](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/BIO/BIO307) | Biostatistics | 3 | Coreq: BIO 201 |  |
| [BIO465](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/BIO/BIO465) | Microbiology | 4.5 | BIO 301; CHEM 230 & 235 or CHEM 231 & 232 |  |
| [CHEM310](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/CHEM/CHEM310) | Inorganic Chemistry | 3 | CHEM 111 / Coreq: CHEM 321 or CHEM 322 |  |
| [CHEM322](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/CHEM/CHEM322) | Physical Chemistry: Quantum Chemistry | 3 | CHEM 102 or CHEM 111 & 112, MATH 122, PHYS 118 & 114 |  |
| [CHEM330](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/CHEM/CHEM330) | Structure and Mechanism in Biochemistry | 3 | CHEM 233 |  |
| [CHEM360](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/CHEM/CHEM360) | Medicinal Chemistry | 3 | CHEM 233 |  |
| [CHEM421](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/CHEM/CHEM421) WI | Physical-Inorganic Laboratory | 3 | CHEM 310, CHEM 322, CHEM 342; WRIT 301 or WRIT 302 or WRIT 303 or WRIT 304 or completion of at least 3 Writing Intensive credits at the 100- or 200-level. |  |
| [CHEM450](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/CHEM/CHEM450) | Advanced Topics in Chemistry | 3 | CHEM310, 321 / Coreq: CHEM322 |  |
| [CHEM461](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/CHEM/CHEM461) | Biochemistry II | 3 | CHEM 460 |  |
| [MATH102](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/MATH/MATH102) | Intermediate Algebra | 1 | MATH 011 or by placement |  |
| or |  |  |  |  |
| [MATH104](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/MATH/MATH104) | College Algebra | 3 | Placement via the CUNY math placement exam or by the dept. / Coreq: Placement via the CUNY math placement exam or by the dept. |  |
| or |  |  |  |  |
| [MATH115](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/MATH/MATH115) | Quantitative Methods for Decision Making | 4 | MATH 102, the equivalent, or placement exam |  |
| [MATH120](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/MATH/MATH120) | Pre-Calculus | 4 | MATH 102 or MATH 104 or MATH 115 or placement by exam |  |
| [PHS360](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/PHS/PHS360) | Regulation of Pharmaceuticals | 3 | PHS 350 |  |
| [PHS480](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/PHS/PHS480) WI | Independent Study | 3 | Dept. Permission Required |  |
| or |  |  |  |  |
| [PHS490](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/PHS/PHS490) WI | Internships in Pharmaceutical Science | 3 | Dept. Permission Required |  |
| [PHS481](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/PHS/PHS481) | Independent Study | 3 | Dept. Permission Required |  |
| [PHS491](https://www.york.cuny.edu/produce-and-print/contents/bulletin/listing-of-courses/listing-of-courses-by-department/PHS/PHS491) | Internships in Pharmaceutical Science II | 3 | Dept. Permission Required |  |