**B.S. Pharmaceutical Product Development Pre-Pharmacy Concentration**

**Year 1**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Gen. Bio | BIO 110 | 4 |  | Genetics | BIO 210 | 3 |
| Gen. Chem I | CHE 103 | 3 |  | Genetics Lab | BIO 210L | 1 |
| Gen. Chem I Lab | CRL 103 | 1 |  | Gen. Chem II | CHE 104 | 3 |
| Statistics | MAT 121 or  | 3 or 3 |  | Gen. Chem II Lab | CRL 104 | 1 |
|  | MAT 125 |  |  | Writing Class | WRT 120 | 3 |
| First Year Experience | FYE XXX | 4 |  | Gen Ed Humanities I |  | 3 |
|  |  |  |  |  |  |  |
|  | Total | 15  |  |  | Total | 14 |

**Year 2**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Organic Chem I | CHE 231 | 4 |  | Molecular Biology Techniques | BIO 333 | 2 |
| Organic Chem I Lab | CRL 231 | 2 |  | Cell Biology (W) | BIO 211 | 4 |
| General Microbiology | BIO 214 | 4 |  | Organic Chem II | CHE 232 | 3 |
| Writing Class | WRT 200 level | 3 |  | Drug Design I | PPD 481 | 3 |
| Gen Ed Art |  | 3 |  | Human Anatomy & Physiology I | BIO 259  | 4 |
|  |  |  |  |  |  |  |
|  | Total | 16 |  |  | Total | 16 |

**Year 3**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Human Anatomy &  | BIO 269 | 4 |  | Drug Interactions | BIO 367 | 3 |
| Physiology II |  |  |  | Physics II | PHY 140 | 4 |
| Drug Design II  | PPD 482 | 3 |  | Drug Design III | PPD 483 | 3 |
| Calculus for the Life Sciences (or Brief Calculus, or Calculus I)  | MAT 145, MAT 143, or MAT 161 | 3, 3 or 4 |  | Technical Writing (W) (or Strategies for Writing (W)) | ENG 371 orENG 375 | 3 |
| Organic Chem II Lab  | CRL 232 | 2 |  | Student Elective |  | 3 |
| Physics I  | PHY 130 | 4 |  |  |  |  |
|  |  |  |  |  |  |  |
|  | Total | 16-17 |  |  | Total | 16 |

**Year 4**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Biochemistry | CHE 476 | 3 |  | Bus. & Prof. Speech (SE) | SPK 230 | 3 |
| Economics (Gen Ed B/SS I) | ECO 112 | 3 |  | Gen Ed Diversity |  | 3 |
| Biomedical Ethics (I) | PHI 371 | 3 |  | PPD Electives |  | 6 |
| Gen Ed Humanities II |  | 3 |  | Optional Student Elective |  | 3 |
| Gen Ed B/SS II |  | 3 |  |  |  |  |
| Special Topics in Drug |  |  |  |  |  |  |
| Development (Optional) | PPD 490 | 1 |  |  |  |  |
|  |  |  |  |  |  |  |
|  | Total | 15-16 |  |  | Total | 12-15 |

**Total Credits: 120**

**PPD Advising Sheet**

1. **General Education Requirements**

**Academic Foundations**

* **First Year Experience Requirement** – FYE 100 (4 Credits)
* **English Composition Requirement** – WRT 120/WRT 123 and 200-level writing course (6 Credits)
* **Mathematics Requirement** – MAT 121/MAT 125 (3 credits)
* **Interdisciplinary Requirement** – PHI 371 (3 Credits)
* **Diverse Communities Requirement** – 3 Credits required: \_\_\_\_\_\_\_\_\_\_

**Distributive Requirements**

1. **Science Requirement** – Fulfilled by CHE 103 and BIO 110 (6 credits)
2. **Behavior and Social Science Requirement** – 6 Credits required: ECO 112; \_\_\_\_\_\_\_\_\_\_
3. **Humanities Requirement** – 6 Credits required: \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_
4. **Arts Requirement** – 3 Credits required: \_\_\_\_\_\_\_\_\_\_

**Additional Baccalaureate Requirements**

1. **Writing Emphasis Requirement** – 9 Credits required: BIO 211; ENG 371/375; \_\_\_\_\_\_\_\_\_\_
2. **Speaking Emphasis Requirement** – 9 Credits required: SPK 230; \_\_\_\_\_\_\_\_\_\_; \_\_\_\_\_\_\_\_\_\_
3. **Ethics Requirement** – 3 Credits required: \_\_\_\_\_\_\_\_\_\_
4. **Pharmaceutical Product Development Major Core Courses**
5. **Required Courses:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| General Biology  | BIO 110 | 4 | Organic Chemistry II Lab | CRL 232 | 2 |
| Genetics  | BIO 210 | 3 | Biochemistry I | CHE 476 | 3 |
| Genetics Lab | BIO 210L | 1 | Principles of Economics II (Micro) | ECO 112 | 3 |
| Cell Physiology | BIO 211 | 4 | Technical Writing OR | ENG 371 | 3 |
| General Microbiology | BIO 214 | 4 |  Strategies for Writing in the  | ENG 375 | 3 |
| Human Anatomy &  | BIO 259 | 4 |  Workplace |  |  |
| Physiology I |  |  | Introduction to Statistics I OR | MAT 121 | 3 |
| Human Anatomy &  | BIO 269 | 4 |  Introduction to Statistics and  | MAT 125 | 3 |
| Physiology II |  |  |  Probability |  |  |
| Molecular Biology Techniques | BIO 333 | 2 | Brief Calculus OR | MAT 143 | 3 |
| Physiology of Drug Interactions | BIO 367 | 3 |  Calculus for the Life Sciences OR | MAT 145 | 3 |
| General Chemistry I | CHE 103 | 3 |  Calculus I | MAT 161 | 4 |
| General Chemistry I Lab | CRL 103 | 1 | General Physics I | PHY 130 | 4 |
| General Chemistry II | CHE 104 | 3 | General Physics II | PHY 140 | 4 |
| General Chemistry II Lab | CRL 104  | 1 | Drug Development I | PPD 481 | 3 |
| Organic Chemistry I | CHE 231 | 4 | Drug Development II | PPD 482 | 3 |
| Exp. Organic Chemistry I | CRL 231  | 2 | Drug Development III | PPD 483 | 3 |
| Organic Chemistry II | CHE 232 | 4 |  |  |  |

1. **PPD Elective Courses** – 6 Credits required: \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

Pharmaceutical Products Development Elective courses will be chosen from the following list with advisement:

|  |  |  |  |
| --- | --- | --- | --- |
| BIO 217 General Zoology | 3 | CHE 424 Advanced Analytical Chemistry | 3 |
| BIO 310 Biostatistical Applications | 3 | CHE 436 Polymer Chemistry | 3 |
| BIO 314 Pathogenic Microbiology | 4 | CHE 477 Biochemistry II | 3 |
| BIO 334 Microbial Genetics | 4 | CHE 479 Chemical Toxicology | 3 |
| BIO 357 Comparative Vertebrate Anatomy | 4 | CHE 535 Pharmaceutical Chemistry | 3 |
| BIO 414 Applied and Industrial Microbiology | 3 | CRL 321 Analytical Chemistry Laboratory | 2 |
| BIO 421 Cellular and Molecular Biology | 4 | CRL 341 Physical Chemistry I Lab | 2 |
| BIO 428 Animal Histology | 3 | CRL 424 Advanced Analytical Chemistry Laboratory | 2 |
| BIO 431 Molecular Genetics | 3 | CRL 436 Polymer Chemistry Laboratory | 2 |
| BIO 440 Human Genetics | 3 | CRL 476 Experimental Biochemistry I Laboratory | 2 |
| BIO 443 Introduction to Gene Expression  | 3 | CRL 477 Experimental Biochemistry II Laboratory | 2 |
| Methodology |  | ECO 111 Principles of Economics (Macro) | 3 |
| BIO 454 Mycology | 3 | ECO 370 The Economics of Health Care | 3 |
| BIO 456 Virology | 3 | HEA 377 Pharmacology | 2 |
| BIO 464 Microbial Physiology | 4 | MAT 162 Calculus II | 4 |
| BIO 465 Immunology | 4 | MAT 261 Calculus III  | 4 |
| BIO 468 Comparative Vertebrate Physiology | 4 | STA 200 Introduction to Statistics II | 3 |
| BIO 469 Human Physiology | 4 | STA 311 Intro. Stat. Comp. Data Management | 3 |
| BIO 484 Epidemiology | 3 | MAT 319 Applied Statistics | 3 |
| BLA 201 The Legal Environment of Business | 3 | MAT 421 Mathematical Statistics I | 3 |
| CHE 321 Analytical Chemistry I | 3 | MAT 422 Mathematical Statistics II | 3 |
| CHE 333 Organic Chemistry III | 3 | MKT 250 Principles of Marketing | 3 |
| CHE 341 Physical Chemistry I | 4 | PPD 484 Pharmaceutical Internship I | 1 |
| CHE 342 Physical Chemistry II | 3 | PPD 485 Pharmaceutical Internship II | 1 |
| CHE 345 Physical Chemistry for the Life Sciences | 3 | PPD 490 PPD Special Topics in Drug Development | 1 |
| CHE 361 Forensic Chemistry I | 3 | PPD 535 Pharmaceutical Chemistry | 3 |
|  |  |  |  |