

# Cell Biology Concentration

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## First Year

| 1st Semester            |  | Credits   |
|-------------------------|--|-----------|
| BIOL 200                | Concepts in Biology  | 4         |
| CHEM 125<br>or CHEM 121 | General Chemistry I <sup>1</sup><br>or Fundamentals of Chemical Principles I | 3         |
| CHEM 125A               | General Chemistry Lab I  | 1         |
| MATH 138                | General Calculus I   | 3         |
| ENGL 101                | English Composition: Introduction to Academic Writing                        | 3         |
| FYS SEM                 | First-Year Student Seminar   | 0         |
| <b>Term Credits</b>     |  | <b>14</b> |

## 2nd Semester

|                         |  |           |
|-------------------------|--|-----------|
| BIOL 201                | Found of Biol: Cell & Molecula   | 3         |
| BIOL 202                | Found of Biol: Cell & Molecula   | 1         |
| CHEM 126<br>or CHEM 122 | General Chemistry II <sup>1</sup><br>or Fundamentals of Chemical Principles II | 3         |
| CHEM 126A               | Gen Chemistry Lab II   | 1         |
| ENGL 102                | English Composition: Introduction to Writing for Research                      | 3         |
| MATH 105                | Elementary Probability and Statistics  | 3         |
| <b>Term Credits</b>     |  | <b>14</b> |

## Second Year

### 1st Semester

|  |   |           |
|--|---|-----------|
| BIOL 205   | Foundations of Biology: Ecology and Evolution Lecture                         | 3         |
| BIOL 206   | Foundations of Biology: Ecology and Evolution Lab                             | 1         |
| CHEM 243   | Organic Chemistry I   | 3         |
| BNFO 135<br>or CS 101  | Programming for Bioinformatics<br>or Computer Programming and Problem Solving | 3         |
| History and Humanities GER 200 level ( <a href="http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level/">http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level/</a> ) |   | 3         |
| Social Sciences GER ( <a href="http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/social-science-ger/">http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/social-science-ger/</a> )        |   | 3         |
| <b>Term Credits</b>  |   | <b>16</b> |

### 2nd Semester

|   |   |           |
|---|---|-----------|
| BIOL 222  | Evolution                                       | 3         |
| CHEM 244  | Organic Chemistry II                            | 3         |
| CHEM 244A   | Organic Chemistry I Laboratory                  | 2         |
| History and Humanities GER 300+ level ( <a href="http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/">http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/</a> ) |   | 3         |
| BIOL 340<br>or R120 340   | Mammalian Physiology<br>or Mammalian Physiology | 4         |
| <b>Term Credits</b>   |   | <b>15</b> |

## Third Year

### 1st Semester

|   |                       |           |
|---|-----------------------|-----------|
| R120 356  | Molecular Biology     | 3         |
| PHYS 102  | General Physics I     | 3         |
| Cell Biology Laboratory Elective  |                       | 4         |
| PHYS 102A   | General Physics I Lab | 1         |
| History and Humanities GER 300+ level ( <a href="http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/">http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/</a> ) |                       | 3         |
| Free Elective <sup>2</sup>  |                       | 3         |
| <b>Term Credits</b>   |                       | <b>17</b> |

**2nd Semester**

|                                 |                        |           |
|---------------------------------|------------------------|-----------|
| R120 355                        | Cell Biology           | 3         |
| PHYS 103                        | General Physics II     | 3         |
| PHYS 103A                       | General Physics II Lab | 1         |
| Cell Biology Elective           |                        | 3         |
| Technical Elective <sup>3</sup> |                        | 3         |
| Cell Biology Elective 400-level |                        | 3         |
| <b>Term Credits</b>             |                        | <b>16</b> |

**Fourth Year****1st Semester**

|  |  |           |
|--|--|-----------|
| Cell Biology Laboratory Elective   |  | 4         |
| Technical Elective <sup>3</sup>  |  | 3         |
| Biology Elective 400 level   |  | 3         |
| Free Elective <sup>2</sup>   |  | 3         |
| Humanities and Social Science Senior Seminar GER ( <a href="http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/hss-capstone/">http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/hss-capstone/</a> ) |  | 3         |
| <b>Term Credits</b>  |  | <b>16</b> |

**2nd Semester**

|                                 |  |            |
|---------------------------------|--|------------|
| Technical Elective <sup>3</sup> |  | 3          |
| Technical Elective <sup>3</sup> |  | 3          |
| Free Elective <sup>2</sup>      |  | 3          |
| Free Elective <sup>2</sup>      |  | 3          |
| <b>Term Credits</b>             |  | <b>12</b>  |
| <b>Total Credits</b>            |  | <b>120</b> |

Biology Credits: 42

<sup>1</sup> CHEM 121 and CHEM 122 require permission from the academic adviser<sup>2</sup> Free Elective - Any course in any subject at any level<sup>3</sup> Technical Elective - Any course in BIOL, BME, CHEM, CS, EVSC, FRSC IE MIS, MIT, IT, IS, PHYS.**Cell Biology Electives**

| Code        | Title  | Credits |
|-------------|--|---------|
| BIOL 315    | Principles of Neurobiology                     | 3       |
| BIOL 350    | Immunology                                     | 3       |
| or R120 350 | Immunology                                     |         |
| BIOL 352    | Genetics                                       | 3       |
| or R120 352 | Genetics                                       |         |
| BIOL 441    | Neurophysiology                                | 3       |
| BIOL 423    | Physiological Mechanisms                       | 3       |
| BIOL 440    | Cell Biology of Disease: Cells gone Bad!       | 3       |
| BIOL 447    | Systems Neurobiology                           | 3       |
| BIOL 448    | Neuropathophysiology: Nervous System Gone Bad! | 3       |
| BIOL 453    | Applied Genetics & Genomics                    | 3       |
| BIOL 491    | Research and Independent Study                 | 3       |
| BIOL 492    | Research and Independent Study                 | 3       |
| CHEM 473    | Biochemistry                                   | 3       |
| CHEM 474    | Biochemistry II                                | 3       |
| R120 360    | Biochemistry                                   | 3       |
| R120 402    | Biology of Cancer                              | 3       |
| R120 444    | Cell Neurobiology                              | 3       |

|          |                    |   |
|----------|--------------------|---|
| R120 455 | Molec Cell Biology | 3 |
| R120 456 | Virology           | 3 |

### Cell Laboratory Electives(Two Required)

| Code                   | Title                                    | Credits |
|------------------------|--|---------|
| BIOL 347               | Lab Approaches in Neuroscience           | 4       |
| BIOL 451               | Cell Physiology and Imaging              | 4       |
| R120 325<br>& R120 326 | Animal Parasites<br>and Parasitology Lab | 4       |
| R216 330               | Plant Physiology                         | 4       |
| R120 335               | General Microbiology                     | 4       |
| R120 404               | Intro to Neuroanatomy                    | 4       |
| R120 405               | Microanatomy of Cells                    | 4       |
| R120 452               | Molecular Biol Techniques                | 4       |
| CHEM 473<br>& CHEM 475 | Biochemistry<br>and Biochemistry Lab I   | 5       |
| FRSC 479               | Forensic Biology & Lab                   | 4       |
| FRSC 480               | Forensic Microscopy & Lab                | 4       |