

# BIOLOGY CONCENTRATION IN CELL AND MOLECULAR BIOLOGY, BACHELOR OF SCIENCE

## Requirements

| Code                           | Title | Credits    |
|--------------------------------|-------|------------|
| Core Curriculum                |       | 42         |
| Required Support Courses       |       | 22         |
| Major (Required) Courses       |       | 37-39      |
| Concentration Required Courses |       | 14-16      |
| Electives                      |       | 1-5        |
| <b>Total Credits</b>           |       | <b>120</b> |

- 36 upper-division credit hours required for degree
- 25% of courses must be taken at A&M-SA for degree
- CIP Code: 26.0101

All students must complete the University's Core Curriculum (<https://catalog.tamusa.edu/undergraduate/academic-policies-procedures/core-curriculum/>) and the specific requirements of the major. In some cases, a course that is required for a major may also be counted towards the Core Curriculum.

| Code                         | Title                                      | Credits |
|------------------------------|--|---------|
| <b>Core Curriculum</b>       |  |         |
| ENGL 1301                    | Composition I                              | 3       |
| ENGL 1302                    | Composition II                             | 3       |
|                              | or ENGL 2311 Technical Writing             |         |
| MATH 2313                    | Calculus I                                 | 3       |
| BIOL 1306                    | Gen Biology I-Attr Living Sys <sup>1</sup> | 3       |
| BIOL 1307                    | Gen Biology II-Biol Organisms <sup>1</sup> | 3       |
| Lang/Phil/Culture            |  | 3       |
| Creative Arts                |  | 3       |
| American History             |  | 3       |
| American History             |  | 3       |
| Government/Political Science |  | 3       |
| Government/Political Science |  | 3       |
| Social & Behavioral Sciences |  | 3       |
| CHEM 1311                    | General Chemistry I                        | 3       |
| CHEM 1312                    | General Chemistry II                       | 3       |
| Subtotals:                   |  | 42      |

### Required Support Courses

|                          |  |   |
|--------------------------|--|---|
| UNIV 1301                | First Year Seminar                                   | 3 |
| MATH 2113                | Calculus I Lab                                       | 1 |
| CHEM 1111                | General Chemistry Lab I                              | 1 |
| CHEM 1112                | General Chemistry Lab II                             | 1 |
| CHEM 2323<br>& CHEM 2123 | Organic Chemistry I<br>and Organic Chemistry I Lab   | 4 |
| CHEM 2325<br>& CHEM 2125 | Organic Chemistry II<br>and Organic Chemistry II Lab | 4 |

|                          |  |    |
|--------------------------|--|----|
| PHYS 1301<br>& PHYS 1101 | General Physics I<br>and General Physics Lab I   | 4  |
| PHYS 1302<br>& PHYS 1102 | General Physics II<br>and General Physics Lab II | 4  |
| Subtotals:               |  | 22 |

### Major (Required) Courses <sup>2</sup>

|   |                                       |   |
|---|---------------------------------------|---|
| BIOL 1106                                 | General Biology I Lab <sup>1</sup>    | 1 |
| BIOL 1107                                 | General Biology II - Lab <sup>1</sup> | 1 |
| BIOL 2415                                 | Statistics in Biology & Medicn        | 4 |
| BIOL 2411                                 | Genetics <sup>1</sup>                 | 4 |
| BIOL 3402                                 | Evolution                             | 4 |
| BIOL 2421                                 | Introduction to Microbiology          | 4 |
| BIOL 3407                                 | Ecology                               | 4 |
| BIOL 3409                                 | Cellular Physiology                   | 4 |
| Select one of the following: <sup>3</sup> |                                       | 1 |

|  |                                |       |
|--|--------------------------------|-------|
| BIOL 4101                                    | Seminar-Integrative Biology    |       |
| BIOL 4102                                    | Seminar-Cell/Molecular Biology |       |
| BIOL 4103                                    | Seminar-Zoology                |       |
| BIOL 4104                                    | Seminar-Ecology                |       |
| BIOL Advanced elective with lab <sup>4</sup> |                                | 4     |
| BIOL advanced electives <sup>5</sup>         |                                | 6-8   |
| Subtotals:                                   |                                | 37-39 |

### Concentration Required Courses

|   |                       |       |
|---|-----------------------|-------|
| BIOL 2431   | Cell Biology          | 4     |
| BIOL 4401   | Molecular Biology     | 4     |
| Select two of the following upper-division electives: |                       | 6-8   |
| BIOL 4402   | Developmental Biology |       |
| BIOL 4406   | Bacteriology          |       |
| BIOL 4407   | Virology              |       |
| BIOL 4408   | Immunology            |       |
| CHEM 4341   | Biochemistry I        |       |
| CHEM 4342   | Biochemistry II       |       |
| Subtotals:  |                       | 14-16 |

### Electives

|  |            |
|--|------------|
| As needed to complete 120 credit hours | 1-5        |
| <b>Total Credits</b>                   | <b>120</b> |

<sup>1</sup> An earned letter grade of C is required for this degree.

<sup>2</sup> 2.0 overall GPA for major

<sup>3</sup> Interdisciplinary, Cell & Molec, Zoology, or Ecology topics respectively

<sup>4</sup> Must be fulfilled by a concentration advanced elective.

<sup>5</sup> Can be fulfilled by any advanced electives

## Plan of Study

*This suggested plan of study is intended to be used as a guide in conjunction with official degree requirements outlined in the catalog. While this plan demonstrates a course of study that covers eight semesters, each student's academic path is unique and your timeline may look different. Students should regularly consult with academic advisors as they plan their course schedules as course offerings may vary. This suggested order of courses assumes the following: 1) students come in TSI compliant for all categories 2) students come in as a freshmen with no previous credits earned 3) students pass all courses the first time. 4) all courses are offered during the semester suggested NOTE: If any of the above assumptions are not met, we encourage*

students to meet with their advisors. The most important component of this suggested schedule of courses is the order of the BIOL, CHEM, and MATH courses.

### First Year

| First Semester |                               | Credits   |
|----------------|-------------------------------|-----------|
| BIOL 1306      | Gen Biology I-Attr Living Sys | 3         |
| BIOL 1106      | General Biology I Lab         | 1         |
| CHEM 1311      | General Chemistry I           | 3         |
| CHEM 1111      | General Chemistry Lab I       | 1         |
| ENGL 1301      | Composition I                 | 3         |
| HIST 1301      | US History to 1865            | 3         |
| UNIV 1301      | First Year Seminar            | 3         |
| <b>Credits</b> |                               | <b>17</b> |

### Second Semester

|                |                               |           |
|----------------|-------------------------------|-----------|
| BIOL 1307      | Gen Biology II-Biol Organisms | 3         |
| BIOL 1107      | General Biology II - Lab      | 1         |
| CHEM 1312      | General Chemistry II          | 3         |
| CHEM 1112      | General Chemistry Lab II      | 1         |
| ENGL 2311      | Technical Writing             | 3         |
| HIST 1302      | US History from 1865          | 3         |
| <b>Credits</b> |                               | <b>14</b> |

### Second Year

#### First Semester

|                |                         |           |
|----------------|-------------------------|-----------|
| BIOL 2411      | Genetics                | 4         |
| CHEM 2323      | Organic Chemistry I     | 3         |
| CHEM 2123      | Organic Chemistry I Lab | 1         |
| MATH 2313      | Calculus I              | 3         |
| MATH 2113      | Calculus I Lab          | 1         |
| GOVT 2305      | Federal Government      | 3         |
| <b>Credits</b> |                         | <b>15</b> |

#### Second Semester

|                |                                 |           |
|----------------|---------------------------------|-----------|
| BIOL 2421      | Introduction to Microbiology    | 4         |
| BIOL 2415      | Statistics in Biology & Medicin | 4         |
| CHEM 2325      | Organic Chemistry II            | 3         |
| CHEM 2125      | Organic Chemistry II Lab        | 1         |
| GOVT 2306      | Texas Government                | 3         |
| <b>Credits</b> |                                 | <b>15</b> |

### Third Year

#### First Semester

|                                      |                       |           |
|--------------------------------------|-----------------------|-----------|
| BIOL 2431                            | Cell Biology          | 4         |
| BIOL 3402                            | Evolution             | 4         |
| PHYS 1301                            | General Physics I     | 3         |
| PHYS 1101                            | General Physics Lab I | 1         |
| Language/Philosophy/Cultural Studies |                       | 3         |
| <b>Credits</b>                       |                       | <b>15</b> |

#### Second Semester

|              |                        |   |
|--------------|------------------------|---|
| BIOL 3407    | Ecology                | 4 |
| BIOL 3409    | Cellular Physiology    | 4 |
| or BIOL 4401 | or Molecular Biology   |   |
| PHYS 1302    | General Physics II     | 3 |
| PHYS 1102    | General Physics Lab II | 1 |

|                |           |
|----------------|-----------|
| Creative Arts  | 3         |
| <b>Credits</b> | <b>15</b> |

### Fourth Year

#### First Semester

|  |                                   |           |
|--|-----------------------------------|-----------|
| BIOL 3409  | Cellular Physiology               | 4         |
| or BIOL 4401   | or Molecular Biology              |           |
| BIOL 4101  | Seminar-Integrative Biology       | 1         |
| or BIOL 4102   | or Seminar-Cell/Molecular Biology |           |
| or BIOL 4103   | or Seminar-Zoology                |           |
| or BIOL 4104   | or Seminar-Ecology                |           |
| BIOL Advanced Elective w/Lab (From concentration required courses) |                                   | 4         |
| BIOL Advanced Elective   |                                   | 3         |
| Social/Behavioral Science  |                                   | 3         |
| <b>Credits</b>   |                                   | <b>15</b> |

#### Second Semester

|   |  |            |
|---|--|------------|
| BIOL Advanced Elective (Must be from concentration required list) |  | 4          |
| BIOL Advanced Elective (Must be from concentration required list) |  | 4          |
| BIOL Advanced Elective  |  | 3          |
| Advanced Elective   |  | 3          |
| <b>Credits</b>  |  | <b>14</b>  |
| <b>Total Credits</b>  |  | <b>120</b> |