

4-year B.S., Calculus-ready, no concentration.

Major Name: **BS in Biological Sciences**

Concentration: **None**

Catalog Year: **2018-2019**

Major Code **BIOL-BS-UB**

Last Modified: **4/29/2019**

Notes/Recommendations

*The program assumes that the student has earned a B or better in appropriate high school courses (biology, chemistry, and math), does not need remedial coursework, and has math placement directly into Calculus Math 1410. Students desiring to go on to professional or graduate programs may require additional coursework.

Recommended Advisors: any faculty in Biological Sciences

This Roadmap is a recommended advising map to complete the degree program in four years. Please consult your academic advisor as you develop your academic plan.

First Year



Fall Semester

| Course | Description | Units |
|-------------------------|---------------------------|-----------|
| BIOL-1050 | General Biology I | 4 |
| CHEM-1100 | General Chemistry I | 5 |
| XX-XXXX | General Education Area A1 | 3 |
| XX-XXXX | General Education Area A2 | 3 |
| Total Units | | 15 |
| Cumulative Total | | 15 |

Spring Semester

| Course | Description | Units |
|-------------------------|---------------------------|-----------|
| BIOL-1150 | General Biology II | 4 |
| CHEM-1110 | General Chemistry II | 5 |
| XX-XXXX | General Education Area A3 | 3 |
| XX-XXXX | General Education Area D1 | 3 |
| Total Units | | 15 |
| Cumulative Total | | 30 |

*BIOL-1150 General Biology II satisfies General Education Area B2 and General Education Lab

**CHEM-1100 General Chemistry I satisfies General Education Area B1

***A course that fulfills another GE (C, D2, UD-C, UD-D) could be selected. Upper division GE courses (UD-B,C or D) cannot be taken until Junior year and cannot include courses in the biological sciences.

Second Year

Fall Semester

| Course | Description | Units |
|-------------|-------------------------------------|-------|
| BIOL-3350 | Introductory Genetics | 3 |
| Choice- | Choose one of the following courses | 3 |
| - MATH-1910 | - Calculus with Applications I | 3 |
| - MATH-1410 | - Calculus I | 4 |
| - MATH-1600 | - Statistics | 4 |
| CHEM-3010 | Organic Chemistry I | 3 |
| CHEM-3012 | Organic Chemistry Lab I | 1 |
| XX-XXXX | General Education Area C1 | 3 |

Total Units 13
Cumulative Total 44

Spring Semester

| Course | Description | Units |
|-------------------------|-------------------------------------|-----------|
| BIOL-3310 | Cellular and Molecular Biology | 3 |
| XXXX-xx | Biology Electives | 4 |
| Choice- | Choose one of the following courses | 4 |
| - PHYS-2100 | Basic Physics I | 4-5 |
| -PHYS-2250/52 | General Physics I | 5 |
| PSCI-1201 | U.S. Constitution | 3 |
| Total Units | | 14 |
| Cumulative Total | | 57 |

*MATH-1910 Calculus with Applications I and MATH-1600 Statistics satisfies General Education Area B4

***A course that fulfills another GE (C, D2, UD-C, UD-D) could be selected. Upper division GE courses (UD-B,C or D) cannot be taken until Junior year and cannot include courses in the biological sciences.

Third Year

Fall Semester

| Course | Description | Units |
|--------------------|-------------------------------------|-------|
| XX-XXXX | Biology Elective Course | 2 |
| Choice | Choose one of the following courses | 4 |
| -PHYS-2110 | Basic Physics II | 4-5 |
| -PHYS-2260/62 | General Physics II | 5 |
| BIOL 3680 | Ecology | 4 |
| XX-XXXX | General Education Area C2 | 3 |
| XX-XXXX | General Education Area D2 | 3 |
| Total Units | | 16 |

Spring Semester

| Course | Description | Units |
|-------------------------|---------------------------|-----------|
| XX-XXXX | Diversity and Systematics | 4 |
| BIOL-4400 | Evolution | 3 |
| XX-XXXX | Biology Elective | 3 |
| XX-XXXX | General Education Area E | 3 |
| XX-XXXX | General Education Area C3 | 3 |
| Total Units | | 16 |
| Cumulative Total | | 89 |

**Cumulative
Total**

73

***A course that fulfills another GE (C, D2, UD-C, UD-D) could be selected. Upper division GE courses (UD-B,C or D) cannot be taken until Junior year.

Fourth Year



Fall Semester

| Course | Description | Units |
|-------------------------|-----------------------------------|------------|
| XX-XXXX | Genetics and Biotechnology Course | 2-3 |
| BIOL 4010 | Res and Tech Writing Biol (WP) | 3 |
| XX-XXXX | Biology Electives | 4 |
| XX-XXXX | General Education UD-B | 3 |
| XX-XXXX | General Education UD-D2 | 3 |
| Total Units | | 15 |
| Cumulative Total | | 104 |

Spring Semester

| Course | Description | Units |
|-------------------------|-------------------------------|------------|
| XX-XXXX | Diversity and Systematics | 4 |
| XX-XXXX | Structure and Function Course | 4 |
| XX-XXXX | General Education UD-C | 3 |
| XX-XXXX | General Education UD-D | 3 |
| XX-XXXX | Biology Electives | 2 |
| Total Units | | 16 |
| Cumulative Total | | 120 |

*For additional dates and details to apply for graduation, visit the [Graduation Website](#).

***A course that fulfills another GE (C, D2, UD-C, UD-D) could be selected.

4 year B.S., Pre-Calc ready, No concentration.

First Year

Fall Semester

| Course | Description | Units |
|------------------|---------------------------|-------|
| BIOL-1050 | General Biology I | 4 |
| XX-XXXX | General Education Area A1 | 3 |
| XX-XXXX | General Education Area A2 | 3 |
| MATH 1100 | Precalculus | 4 |
| XX-XXXX | Total Units | 14 |
| Cumulative Total | | 14 |

Spring Semester

| Course | Description | Units |
|------------------|---------------------------|-------|
| BIOL-1150 | General Biology II | 4 |
| CHEM-1100 | General Chemistry I | 4 |
| CHEM-1102 | General Chemistry I Lab | 1 |
| XX-XXXX | General Education Area A3 | 3 |
| XX-XXXX | General Education Area D1 | 3 |
| Total Units | | 15 |
| Cumulative Total | | 29 |

*BIOL-1150 General Biology II satisfies General Education Area B1

**A course that fulfills another GE (C2, D2, E) should be selected. Upper division GE courses (Area UD-B, C or D) cannot be taken until Junior year.

***In order to graduate with a degree major, students must complete at least 120 units. Students are encouraged to take additional courses in supporting fields that relate to their career interests.

Second Year

Take Writing Proficiency Screening Test (WPST)

Fall Semester

| Course | Description | Units |
|------------------|---|-------|
| CHEM-1110 | General Chemistry II | 4 |
| CHEM-1112 | General Chemistry II Lab | 1 |
| PSCI- 1201 | U.S. Constitution | 3 |
| XX-XXXX | General Education Area C1 | 3 |
| Choice- | Choose One of the follow classes | |
| - | MATH 1410 - Calculus I | 4 |
| - | or MATH 1600 – Statistics | 4 |
| - | or MATH 1601 - Statistics with Support I and MATH 1602 - Statistics with Support II | 3 |
| - | or MATH 1610 - Statistics for Decision Making | 3 |
| Total Units | | 14 |
| Cumulative Total | | 43 |

*CHEM-1110 General Chemistry II and General Chemistry II Lab satisfies GE Area B2 and B3

Spring Semester

| Course | Description | Units |
|------------------|---------------------------|-------|
| BIOL-3350 | Introductory Genetics | 3 |
| CHEM-3010 | - Organic Chemistry I | 3 |
| CHEM-3012 | - Organic Chemistry Lab I | 1 |
| XX-XXXX | Major Electives | 3 |
| XX-XXXX | General Education Area D2 | 3 |
| XX-XXXX | General Education Area C2 | 3 |
| Total Units | | 16 |
| Cumulative Total | | 59 |

**A that fulfills another GE (C1 or C2, D2, E) should be selected. Upper division GE courses (Area UD-B,C, or D) cannot be taken until Junior year.

***In order to graduate with a degree major, students must complete at least 120 units. Students are encouraged to take additional courses in supporting fields that relate to their career interests.

**If you choose CHEM 3010 Organic Chemistry I, you must enroll in CHEM 3012 Organic Chemistry Lab I

Third Year

Fall Semester

| Course | Description | Units |
|------------------|----------------------------------|-------|
| BIOL-3310 | Cellular and Molecular Biology | 3 |
| XX-XXXX | Major Elective | 3 |
| Choice | Choose One of the follow classes | 4-5 |
| - PHYS-2250/52 | General Physics I + Lab | 5 |
| - PHYS-2100 | - Basic Physics I | 4 |
| XX-XXXX | General Education Area C1 or C2 | 3 |
| XX-XXXX | General Education Area E | 3 |
| Total Units | | 16 |
| Cumulative Total | | 75 |

Spring Semester

| Course | Description | Units |
|------------------|----------------------------------|-------|
| BIOL 3680 | Ecology | 4 |
| XX-XXXX | Major Elective | 3 |
| XX-XXXX | General Education Area D2 | 3 |
| XX-XXXX | General Education UD-B | 3 |
| Choice | Choose One of the follow classes | 4-5 |
| - PHYS-2260/62 | General Physics II + Lab | 5 |
| - PHYS-2110 | Basic Physics II | 4 |
| Total Units | | 17 |
| Cumulative Total | | 92 |

**A course that fulfills another GE (C, D2, UD-C, UD-D) should be selected. Upper division GE courses (UD-B, C or D) cannot be taken until Junior year.

Fourth Year

Apply for Graduation*

Fall Semester

| Course | Description | Units |
|------------------|-----------------------------------|-------|
| BIOL-4400 | Evolution | 3 |
| XX-XXXX | Diversity and Systematics Course | 4 |
| XX-XXXX | Genetics and Biotechnology Course | 2-3 |
| XX-XXXX | General Education UD-D | 3 |
| BIOL 4010 | Res and Tech Writing in Biol (WP) | 3 |
| Total Units | | 15 |
| Cumulative Total | | 107 |

Spring Semester

| Course | Description | Units |
|------------------|-------------------------------|-------|
| XX-XXXX | Structure and Function Course | 4 |
| XX-XXXX | Diversity and Systematics | 4 |
| XX-XXXX | Major Elective | 3 |
| XX-XXXX | Major Elective | 3 |
| XX-XXXX | General Education UD-C | 3 |
| Total Units | | 17 |
| Cumulative Total | | 124 |

*For additional dates and details to apply for graduation, visit the Graduation Website.

***In order to graduate with a degree major, students must complete at least 120 units. Students are encouraged to take additional courses in supporting fields that relate to their career interests.

4 year B.S., Pre-Calc ready, MCMB concentration.

First Year

Fall Semester

| Course | Description | Units |
|------------------|---------------------------|-------|
| BIOL-1050 | General Biology I | 4 |
| XX-XXXX | General Education Area A1 | 3 |
| XX-XXXX | General Education Area A2 | 3 |
| MATH 1100 | Precalculus | 4 |
| XX-XXXX | Total Units | 14 |
| Cumulative Total | | 14 |

Spring Semester

| Course | Description | Units |
|------------------|---------------------------|-------|
| BIOL-1150 | General Biology II | 4 |
| CHEM-1100 | General Chemistry I | 4 |
| CHEM-1102 | General Chemistry I Lab | 1 |
| XX-XXXX | General Education Area A3 | 3 |
| XX-XXXX | General Education Area D1 | 3 |
| Total Units | | 15 |
| Cumulative Total | | 29 |

*BIOL-1150 General Biology II satisfies General Education Area B1

**A course that fulfills another GE (C2, D2, E) should be selected. Upper division GE courses (Area UD-B, C or D) cannot be taken until Junior year.

***In order to graduate with a degree major, students must complete at least 120 units. Students are encouraged to take additional courses in supporting fields that relate to their career interests.

Second Year

Take Writing Proficiency Screening Test (WPST)

Fall Semester

| Course | Description | Units |
|------------------|---|-------|
| CHEM-1110 | General Chemistry II | 4 |
| CHEM-1112 | General Chemistry II Lab | 1 |
| PSCI- 1201 | U.S. Constitution | 3 |
| XX-XXXX | General Education Area C1 | 3 |
| Choice- | Choose One of the follow classes | |
| - | MATH 1410 - Calculus I | 4 |
| - | or MATH 1600 – Statistics | 4 |
| - | or MATH 1601 - Statistics with Support I and MATH 1602 - Statistics with Support II | 3 |
| - | or MATH 1610 - Statistics for Decision Making | 3 |
| Total Units | | 14 |
| Cumulative Total | | 43 |

*CHEM-1110 General Chemistry II and General Chemistry II Lab satisfies GE Area B2 and B3

Spring Semester

| Course | Description | Units |
|------------------|---------------------------|-------|
| BIOL-3350 | Introductory Genetics | 3 |
| CHEM-3010 | - Organic Chemistry I | 3 |
| CHEM-3012 | - Organic Chemistry Lab I | 1 |
| XX-XXXX | Major Electives | 3 |
| XX-XXXX | General Education Area D2 | 3 |
| XX-XXXX | General Education Area C2 | 3 |
| Total Units | | 16 |
| Cumulative Total | | 59 |

**A that fulfills another GE (C1 or C2, D2, E) should be selected. Upper division GE courses (Area UD-B,C, or D) cannot be taken until Junior year.

***In order to graduate with a degree major, students must complete at least 120 units. Students are encouraged to take additional courses in supporting fields that relate to their career interests.

**If you choose CHEM 3010 Organic Chemistry I, you must enroll in CHEM 3012 Organic Chemistry Lab I

Third Year

Fall Semester

| Course | Description | Units |
|------------------|----------------------------------|-------|
| BIOL-3310 | Cellular and Molecular Biology | 3 |
| XXXX-XX | Complementary Course | 3 |
| Choice | Choose One of the follow classes | 4-5 |
| - PHYS-2250/52 | General Physics I + Lab | 5 |
| - PHYS-2100 | - Basic Physics I | 4 |
| XX-XXXX | General Education Area C1 or C2 | 3 |
| XX-XXXX | General Education Area E | 3 |
| Total Units | | 16 |
| Cumulative Total | | 75 |

Spring Semester

| Course | Description | Units |
|------------------|----------------------------------|-------|
| MBIO 3010 | Bacteriology | 3 |
| MBIO 3032 | Bacteriology Lab | 2 |
| XX-XXXX | Biotechnology Course | 2 |
| XX-XXXX | General Education Area D2 | 3 |
| XX-XXXX | General Education UD-B | 3 |
| Choice | Choose One of the follow classes | 4-5 |
| - PHYS-2260/62 | General Physics II + Lab | 5 |
| - PHYS-2110 | Basic Physics II | 4 |
| Total Units | | 17 |
| Cumulative Total | | 92 |

**A course that fulfills another GE (C, D2, UD-C, UD-D) should be selected. Upper division GE courses (UD-B, C or D) cannot be taken until Junior year.

Fourth Year

Apply for Graduation*

Fall Semester

| Course | Description | Units |
|------------------|-----------------------------------|-------|
| BIOL-4400 | Evolution | 3 |
| BIOL 3680 | Ecology | 4 |
| XX-XXXX | Complementary Course | 3 |
| XX-XXXX | General Education UD-D | 3 |
| BIOL 4010 | Res and Tech Writing in Biol (WP) | 3 |
| Total Units | | 16 |
| Cumulative Total | | 108 |

Spring Semester

| Course | Description | Units |
|------------------|---------------------------|-------|
| XX-XXXX | Physiology Course | 4 |
| XX-XXXX | Diversity and Systematics | 4 |
| XX-XXXX | Complementary Course | 3 |
| BIOL 4010 | Complementary Course | 2 |
| XX-XXXX | General Education UD-C | 3 |
| Total Units | | 16 |
| Cumulative Total | | 124 |

*For additional dates and details to apply for graduation, visit the Graduation Website.

4 year B.S., Pre-Calc ready, OEEB concentration.

First Year

Fall Semester

| Course | Description | Units |
|------------------|---------------------------|-------|
| BIOL-1050 | General Biology I | 4 |
| XX-XXXX | General Education Area A1 | 3 |
| XX-XXXX | General Education Area A2 | 3 |
| MATH 1100 | Precalculus | 4 |
| XX-XXXX | Total Units | 14 |
| Cumulative Total | | 14 |

Spring Semester

| Course | Description | Units |
|------------------|---------------------------|-------|
| BIOL-1150 | General Biology II | 4 |
| CHEM-1100 | General Chemistry I | 4 |
| CHEM-1102 | General Chemistry I Lab | 1 |
| XX-XXXX | General Education Area A3 | 3 |
| XX-XXXX | General Education Area D1 | 3 |
| Total Units | | 15 |
| Cumulative Total | | 29 |

*BIOL-1150 General Biology II satisfies General Education Area B1

**A course that fulfills another GE (C2, D2, E) should be selected. Upper division GE courses (Area UD-B, C or D) cannot be taken until Junior year.

***In order to graduate with a degree major, students must complete at least 120 units. Students are encouraged to take additional courses in supporting fields that relate to their career interests.

Second Year

Take Writing Proficiency Screening Test (WPST)

Fall Semester

| Course | Description | Units |
|------------------|---|-------|
| CHEM-1110 | General Chemistry II | 4 |
| CHEM-1112 | General Chemistry II Lab | 1 |
| PSCI- 1201 | U.S. Constitution | 3 |
| XX-XXXX | General Education Area C1 | 3 |
| Choice- | Choose One of the follow classes | |
| - | MATH 1410 - Calculus I | 4 |
| - | or MATH 1600 – Statistics | 4 |
| - | or MATH 1601 - Statistics with Support I and MATH 1602 - Statistics with Support II | 3 |
| - | or MATH 1610 - Statistics for Decision Making | 3 |
| Total Units | | 14 |
| Cumulative Total | | 43 |

*CHEM-1110 General Chemistry II and General Chemistry II Lab satisfies GE Area B2 and B3

Spring Semester

| Course | Description | Units |
|------------------|---------------------------|-------|
| BIOL-3350 | Introductory Genetics | 3 |
| CHEM-3010 | - Organic Chemistry I | 3 |
| CHEM-3012 | - Organic Chemistry Lab I | 1 |
| XX-XXXX | Major Electives | 3 |
| XX-XXXX | General Education Area D2 | 3 |
| XX-XXXX | General Education Area C2 | 3 |
| Total Units | | 16 |
| Cumulative Total | | 59 |

**A that fulfills another GE (C1 or C2, D2, E) should be selected. Upper division GE courses (Area UD-B,C, or D) cannot be taken until Junior year.

***In order to graduate with a degree major, students must complete at least 120 units. Students are encouraged to take additional courses in supporting fields that relate to their career interests.

**If you choose CHEM 3010 Organic Chemistry I, you must enroll in CHEM 3012 Organic Chemistry Lab I

Third Year

Fall Semester

| Course | Description | Units |
|------------------|----------------------------------|-------|
| BIOL-3310 | Cellular and Molecular Biology | 3 |
| BIOL-3680 | Major Elective | 3 |
| Choice | Choose One of the follow classes | 4-5 |
| - PHYS-2250/52 | General Physics I + Lab | 5 |
| - PHYS-2100 | - Basic Physics I | 4 |
| XX-XXXX | General Education Area C1 or C2 | 3 |
| XX-XXXX | General Education Area E | 3 |
| Total Units | | 16 |
| Cumulative Total | | 75 |

Spring Semester

| Course | Description | Units |
|------------------|----------------------------------|-------|
| BIOL 3680 | Ecology | 4 |
| XX-XXXX | Complementary Course | 2 |
| XX-XXXX | General Education Area D2 | 3 |
| XX-XXXX | General Education UD-B | 3 |
| Choice | Choose One of the follow classes | 4-5 |
| - PHYS-2260/62 | General Physics II + Lab | 5 |
| - PHYS-2110 | Basic Physics II | 4 |
| Total Units | | 16 |
| Cumulative Total | | 91 |

**A course that fulfills another GE (C, D2, UD-C, UD-D) should be selected. Upper division GE courses (UD-B, C or D) cannot be taken until Junior year.

Fourth Year

Apply for Graduation*

Fall Semester

| Course | Description | Units |
|------------------|-------------------------------------|-------|
| BIOL-4400 | Evolution | 3 |
| XX-XXXX | Diversity and Systematics Course | 4 |
| XX-XXXX | Choose one of the following courses | 4 |
| - | BIOL 4630 – Marine Ecology | 4 |
| - | or BIOL 4650 – Freshwater Ecology | 4 |
| - | or BOTY 4600 – Plant Ecology | 4 |
| XX-XXXX | General Education UD-D | 3 |
| BIOL 4010 | Res and Tech Writing in Biol (WP) | 3 |
| Total Units | | 17 |
| Cumulative Total | | 108 |

Spring Semester

| Course | Description | Units |
|------------------|-----------------------------------|-------|
| XX-XXXX | Structure and Function Course | 4 |
| XX-XXXX | Diversity and Systematics | 4 |
| XX-XXXX | Complementary Course | 3 |
| XX-XXXX | Genetics and Biotechnology Course | 2-3 |
| XX-XXXX | General Education UD-C | 3 |
| Total Units | | 16 |
| Cumulative Total | | 124 |

*For additional dates and details to apply for graduation, visit the Graduation Website.

***In order to graduate with a degree major, students must complete at least 120 units. Students are encouraged to take additional courses in supporting fields that relate to their career interests.

2 year B.S., No concentration.

Third year *Take Writing Proficiency Screening Test (WPST)*

Fall Semester

| Course | Description | Units |
|------------------|-------------------------|-------|
| Biol 3350 | Intro. Genetics | 3 |
| Chem 3010/3012 | Organic Chem. | 4 |
| XX-XXXX | Diversity & Systematics | 4 |
| XXXX-XXXX | GE UD-B | 3 |
| Total Units | | 14 |
| Cumulative Total | | 14 |

Spring Semester

| Course | Description | Units |
|------------------|--------------------------|-------|
| Biol 3310 | Cell. Mol. Biol. | 3 |
| BIOL 3680 | Ecology | 4 |
| XX-XXXX | Major Elective | 3 |
| XXXX-XXXX | Genetics & Biotechnology | 2 |
| XXXX-XXXX | GE UD-C | 3 |
| Total Units | | 15 |
| Cumulative Total | | 29 |

*Upper division GE courses (UD-B, C or D) cannot be taken until Junior year.

Fourth Year *Apply for Graduation***

Fall Semester

| Course | Description | Units |
|------------------|-------------------------------|-------|
| Biol 4400 | Evolution | 3 |
| Biol 4010 | Writing Proficiency (BIOL WP) | 3 |
| XX-XXXX | Structure & Function | 4 |
| XX-XXXX | Major Elective | 2 |
| XXXX-XXXX | GE UD-D | 3 |
| Total Units | | 15 |
| Cumulative Total | | 45 |

Spring Semester

| Course | Description | Units |
|------------------|-------------------------|-------|
| XX-XXXX | Major Elective | 4 |
| XX-XXXX | Diversity & Systematics | 4 |
| XX-XXXX | Major Elective | 3 |
| XX-XXXX | Major Elective | 3 |
| Total Units | | 13 |
| Cumulative Total | | 58 |

** For additional dates and details to apply for graduation, visit the Graduation Website.