

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.

4 year B.A.

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
XX-XXXX	Math 1070 or 1072	3
Total Units		13
Cumulative Total		13

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 C1	3
Total Units		15
Cumulative Total		28

*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 & CA & Local Gov.	3
XX-XXXX	General Education Area D1	3
XX-XXXX	General Education Area C2	3
Total Units		14
Cumulative Total		42

*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
Choice-	Choose one of the following courses	4
- CHEM-3010	- Organic Chemistry I	3
- CHEM-3012	- Organic Chemistry Lab I	1
- PHYS-2250	- General Physics I	4
- PHYS-2100	- Basic Physics I	5
XX-XXXX	General Education Area D2	3
XX-XXXX	General Education Area D2	3
Total Units		13
Cumulative Total		55

**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	Ecology	4
XX-XXXX	General Education Area E	3
XX-XXXX	Elective Units	3
XX-XXXX	General Education Area C1 or C2	3
Total Units		16
Cumulative Total		71

Spring Semester

Course	Description	Units
XX-XXXX	Diversity and Systematics Course	4
XX-XXXX	Major Elective	3
XX-XXXX	General Education Area UD-C	3
XX-XXXX	General Education UD-B	3
XX-XXXX	Elective Units	4
Total Units		17
Cumulative Total		88

**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.

***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.

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
XX-XXXX	General Education UD-D	3
XX-XXXX	Writing Proficiency Course	3
Total Units		15
Cumulative Total		103

Spring Semester

Course	Description	Units
XX-XXXX	Structure and Function Course	4
XX-XXXX	Major Elective	4
XX-XXXX	Major Elective	3
XX-XXXX	Elective Units	3
XX-XXXX	Elective Units	3
Total Units		17
Cumulative Total		120

*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.A.

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

Fall Semester

Course	Description	Units
Biol 3350	Intro. Genetics	3
BIOL 3680	Ecology	4
XX-XXXX	Diversity & Systematics	4
XXXX-XXXX	GE UD-B	3
XX-XXXX	Elective Units	1
Total Units		15
Cumulative Total		15

Spring Semester

Course	Description	Units
Biol 3310	Cell. Mol. Biol.	3
XX-XXXX	Major Elective	3
XXXX-XXXX	GE UD-C	3
XX-XXXX	Genetics & Biotechnology	2
XX-XXXX	Elective Units	4
Total Units		15
Cumulative Total		30

*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
XXXX-XXXX	GE UD-D	3
XX-XXXX	Elective Units	2
Total Units		15
Cumulative Total		45

Spring Semester

Course	Description	Units
XX-XXXX	Major Elective	4
XX-XXXX	Diversity & Systematics	4
XX-XXXX	Elective Units	4
XX-XXXX	Elective Units	3
Total Units		15
Cumulative Total		60

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