

Student ID:

Date Admitted Into Major:

## BACHELOR OF ARTS BIOLOGY

#### GENERAL EDUCATION REQUIREMENTS

Competencies

- □ ◆ Basic College Math
- □ ◆ Reading Comprehension

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#### ◆General Education Categories (34-35 credits total)

		•			,	
FYS	First Year Sei			3		
♦W-I	Written Comn	nunication - Level I			3	
+OC	Oral Commun	nication			3	
PGR	Personal Gro	wth & Responsibility			3	
CEA	Creative Expr			3		
WC	World Culture			3		
HP	The Human F			3		
CS	Contemporar			3		
SR	Scientific				3-4	
SK	Reasoning:				4	
QR	Quantitative F			3		
<b>‡</b> Written Communication (Level II and Level III)						
W-II	Written Comn	nunication - Level II				]

		Foreign	Languag	je ( 0-12 Ci	edits tota	al)	
/-111	Wr	itten Comm	nunication	- Level III			

#### ▶ ¶ Free Electives/Minor (12 credits minimum)

May be necessary to take additional credits to attain the minimum 120 credits required for graduation depending on choices made for general education or minor selection.

COURSES IN MAJOR (38-41 credits total)					
		Required (35-37 credits)			
BIO	131	Introduction to Organisms	4		
BIO	132	Introduction to Cells	4		
BIO	208	Environmental Problems	3		
BIO	212	Cell Biology	4		
BIO	220	Evolutionary Morphology	3		
BIO	402	Genetics	4		
BIO	415	Biology Seminar	3		
†BIO		Plant Biology Or Animal Biology elective	3-4		
BIO		Cell/Molecular Biology elective	4		
†BIO		Structure/Function Or Ecology/Evolution elective	3-4		

	Electives (3-4 credits)		
¶ BIO	Biology Elective	3-4	

# ▼ Required Support Courses (3-4 credits total) MAT 110 Pre-calculus or 0r 3-4

#### Required Minor: Chemistry (16 credits total)

CHE	130	General Chemistry I	4	
CHE	131	General Chemistry II	4	
CHE	212	Organic Chemistry I	4	
CHE	213	Organic Chemistry II	4	

Students may choose to use support courses to satisfy general education categories, but may not be required to do so. Note: If a course is used to satisfy two or more requirements (for example, a support course and Scientific Reasoning requirement), the credits are counted in only one place. Using a course to satisfy more than one requirement does not reduce the credit total required for graduation.

MAT

220

Calculus I

Courses used to satisfy the general education requirements of the university must be taken from a minimum of six different academic disciplines. First Year Seminar and Level I Written Communications courses are exempt from this restriction. Courses may not be used to fulfill both major discipline and general education requirements.

# These Scientific Reasoning General Education Category courses do not have to be a sequence or be from the same discipline

Level II and Level III Written Communications Courses may be used to satisfy requirements anywhere else in a student's program of study where they may apply. The credits are counted only in one area.

 At least two of the following must have a lab: the Plant or Animal elective, the Structure/Function elective or Ecology/Evolution elective, or the BIO elective. Electives within the major are to be chosen from 300 to 400 level courses, exclusive of BIO 304, 324, and 328. A maximum 4 credits from BIO 407, 416, 418, 420, or 422 may be used to fulfill one BIO Elective; additional credits will count as Free Electives. Secondary Education minors must select BIO320, and one course in Geological Sciences.

 B.A. Biology majors are strongly urged to elect a Computer Science course and one year of Physics.

 COMPETENCIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS

 GENERAL EDUCATION CATEGORIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS

Exceptions in the timing of courses will be made for transfer students

Total credits for graduation: 120



Student ID:

Date Admitted Into Major:

# BACHELOR OF SCIENCE

## BIOLOGY

#### GENERAL EDUCATION REQUIREMENTS

#### Competencies

	♦ Basic College Math
]	♦ Reading Comprehension

#### ♣General Education Categories (34-35 credits total)

				,		
♦FYS	First Year Se	minar			3	
♦W-I	Written Comm	nunication - Level I			3	
+OC	Oral Commun	nication			3	
PGR	Personal Gro	wth & Responsibility			3	
CEA	Creative Expr	Creative Expression & Appreciation			3	
WC	World Culture	World Cultures			3	
HP	The Human F	The Human Past			3	
CS	Contemporar	Contemporary Society			3	
SR	Scientific				3-4	
30	Reasoning:				4	
QR	Quantitative F	Quantitative Reasoning			3	
<b>‡</b> Written Communication (Level II and Le				Level I	II)	
W-II	Written Comm	nunication - Level II				]
W-III	Written Com	nunication - Level III				

#### Free Electives (8 credit minimum total)

May be necessary to take additional credits to attain the minimum 120 credits required for graduation depending on choices made for general education or

	minor selection.	

#### Required (42 – 45 credits) BIO 131 Introduction to Organisms 4 BIO 132 Introduction to Cells 4 Environmental Problems BIO 208 3 BIO 212 Cell Biology 4 **Evolutionary Morphology** BIO 220 3 BIO Genetics 402 4 **Biology Seminar** 3 BIO 415 406 Microbiology 4 BIO or 409 Biochemistry Plant Biology Elective † BIO 4 † BIO Animal Biology Elective 3-4 † BIO Structure/Function Elective 3-4 † BIO 3-4 Ecology/Evolution Elective

COURSES IN MAJOR (45-49 credits total)

#### Electives (3-4 credits)

¶ BIO Biology elective 3-4				
	¶ BIO	Biology elective	3-4	

#### Required Support Courses (11-12 credits total)

	110	Pre-calculus		
MAT	or		3-4	
	220	Calculus I		
	211A	College Physics I		
◊ PHS	or		4	
	221	General Physics I		
	212A	College Physics II		
◊ PHS	or		4	
	222	General Physics II		

#### Required Minor: Chemistry (16 credits total)

CHE	130	General Chemistry I	4	
CHE	131	General Chemistry II	4	
CHE	212	Organic Chemistry I	4	
CHE	213	Organic Chemistry II	4	

♦ GENERAL EDUCATION CATEGORIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS

Students may choose to use support courses to satisfy general education categories, but may not be required to do so. Note: If a course is used to satisfy two or more requirements (for example, a support course and Scientific Reasoning requirement), the credits are counted in only one place. Using a course to satisfy more than one requirement does not reduce the credit total required for graduation.

- Courses used to satisfy the general education requirements of the university must be taken from a minimum of six different academic disciplines. First Year Seminar and Level I Written Communications courses are exempt from this restriction. Courses may not be used to fulfill both major discipline and general education requirements.
- These Scientific Reasoning General Education Category courses do not have to be a sequence or be from the same discipline.

Level II and Level III Written Communications Courses may be used to satisfy requirements anywhere else in a student's program of study where they may apply. The credits are counted only in one area.

Electives within the major are to be chosen from 300 to 400 level courses, exclusive of BIO 304, 324 and 328. A maximum 4 credits from BIO 407,408N, 416, 418, 420 or 422 may be used to fulfill one Biology Elective; additional credits will count as Free Electives. Secondary Education minors must select BIO 320, and one course in Geological Sciences.

**†** Two of the three group electives MUST have a lab.

The sequence can be either PHS 211A and 212A, or PHS 221 and 222.

COMPETENCIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS

Exceptions in the timing of courses will be made for transfer students

Total credits for graduation: 120

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SR

QR

W-II

W-III

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Name:

Student ID:

Date Admitted Into Major:

# **BACHELOR OF SCIENCE**

## BIOLOGY

AQUACULTURE CONCENTRATION

BIO

BIO

131

132

#### **GENERAL EDUCATION REQUIREMENTS**

#### **COURSES IN MAJOR (48 credits total)**

4

4

Required	(48 credits)
itequileu i	

Introduction to Organisms

Introduction to Cells

	Competencies				
] ♦Ba	sic College Math				
] ♦ Re	ading Comprehension				
	Conoral Education Catagorias (	24 25 or	adita ta	tal)	
	General Education Categories (	34-35 Cr		, 	
FYS	First Year Seminar			3	
♦W-I	Written Communication - Level I			3	
<b>♦</b> 00	Oral Communication			3	
PGR	Personal Growth & Responsibility			3	
CEA	Creative Expression & Appreciation			3	
WC	World Cultures			3	
HP	The Human Past			3	
CS	Contemporary Society			3	

# SR Lab course

Scientific

Reasoning:

Quantitative Reasoning

Written Communication - Level II

Written Communication - Level III

BIO	208	Environmental Problems	3	
BIO	212	Cell Biology	4	
BIO	220	Evolutionary Morphology	3	
BIO	310	Invertebrate Zoology	4	
	320	General Ecology		
BIO	or		4	
	322	Biological Oceanography		
BIO	323	Fish Biology	4	
BIO	326	Marine Botany	4	
BIO	345	Introduction to Aquaculture	4	
BIO	402	Genetics	4	
BIO	403	Advanced Aquaculture	3	
BIO	415	Biology Seminar	3	
¥	Requir	ed Support Courses (11-12 credit	ts total)	

	110	Precalculus		
MAT	or		3-4	
	220	Calculus I		
	211A	College Physics I		
PHS	or		4	
	221	General Physics I		
CHE	321	Quantitative Analysis	4	

#### Free Electives (9 credits minimum total)

**‡** Written Communication (Level II and Level III)

May be necessary to take additional credits to attain the minimum 120 credits required for graduation depending on choices made for general education or alaction

#### Required Minor: Chemistry (16 credits total)

CHE	130	General Chemistry I	4	
CHE	131	General Chemistry II	4	
CHE	212	Organic Chemistry I	4	
CHE	213	Organic Chemistry II	4	

Students may choose to use support courses to satisfy general education categories, but may not be required to do so. Note: If a course is used to satisfy two or more requirements (for example, a support course and Scientific Reasoning requirement), the credits are counted in only one place. Using a course to satisfy more than one requirement does not reduce the credit total required for graduation.

Courses used to satisfy the general education requirements of the university must be taken from a minimum of six different academic disciplines. First Year Seminar and Level I Written Communications courses are exempt from this restriction. Courses may not be used to fulfill both major discipline and

general education requirements.

These Scientific Reasoning General Education Category courses do not have to be a sequence or be from the same discipline.

3-4

4

3

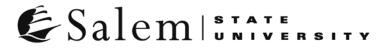
Level II and Level III Written Communications Courses may be used to satisfy requirements anywhere else in a student's program of study where they may ŧ apply. The credits are counted only in one area. Electives within the major are to be chosen from 300 to 400 level courses, exclusive of BIO 304, 324 and 328. A maximum 4 credits from BIO 407,408N,

416, 418, 420 or 422 may be used to fulfill one Biology Elective; additional credits will count as Free Electives. Secondary Education minors must select BIO ¶ 320, and one course in Geological Science.

♦ COMPETENCIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS

♦ GENERAL EDUCATION CATEGORIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS Exceptions in the timing of courses will be made for transfer students

Total credits for graduation: 120



Student ID:

Date Admitted Into Major:\_\_\_\_\_

# **BACHELOR OF SCIENCE**

### BIOLOGY

#### **BIOMEDICAL SCIENCES CONCENTRATION**

#### GENERAL EDUCATION REQUIREMENTS

3

3

3

3

3

3

3

3 3-4

4

3

# COURSES IN MAJOR (47-49 credits total)

Com	pete	ncies

General Education Categories (34-35 credits total)

Basic College Math
 Reading Comprehension

♦FYS

♦W-I

**•**OC

PGR

CEA WC

HP

CS

SR

QR

W-II

W-III

First Year Seminar

World Cultures

Scientific

Reasoning:

The Human Past

Contemporary Society

Quantitative Reasoning

Written Communication - Level II

Written Communication - Level III

**Oral Communication** 

Written Communication - Level I

Personal Growth & Responsibility

Creative Expression & Appreciation

**‡** Written Communication (Level II and Level III)

Free Electives (8 credit minimum total) May be necessary to take additional credits to attain the minimum 120 credits required for graduation depending on choices made for general education or minor selection.

# BIO 131 Introduction to Organisms BIO 132 Introduction to Cells

4

BIO	132	Introduction to Cells	4	
BIO	200	Anatomy and Physiology I	4	
BIO	201	Anatomy and Physiology II	4	
BIO	208	Environmental Problems	3	
BIO	210	Basic Nutrition	3	
BIO	212	Cell Biology	4	
BIO	402	Genetics	4	
	406	Microbiology		
BIO	or		4	
	409	Biochemistry		
BIO	415	Biology Seminar	3	

#### ∞ Electives (10-12 credits)

¶ BIO	Biology elective	4	
¶ BIO	Biology elective	3-4	
¶ BIO	Biology elective	3-4	

#### Required Support Courses (11-12 credits total)

	110	Pre-calculus		
MAT	or		3-4	
	220	Calculus I		
	2 s	semester Physics sequence		
	211A	College Physics I		
◊ PHS	or		4	
	221	General Physics I		
	212A	College Physics II		
◊ PHS	or		4	
	222	General Physics II		

#### Required Minor: Chemistry (16 credits total)

CHE	130	General Chemistry I	4
CHE	131	General Chemistry II	4
CHE	212	Organic Chemistry I	4
CHE	213	Organic Chemistry II	4

• Students may choose to use support courses to satisfy general education categories, but may not be required to do so. Note: If a course is used to satisfy two or more requirements (for example, a support course and Scientific Reasoning requirement), the credits are counted in only one place. Using a course to satisfy more than one requirement does not reduce the credit total required for graduation.

Courses used to satisfy the general education requirements of the university must be taken from a minimum of six different academic disciplines. First Year

Seminar and Level I Written Communications courses are exempt from this restriction. Courses may not be used to fulfill both major discipline and general education requirements.

# These Scientific Reasoning General Education Category courses do not have to be a sequence or be from the same discipline.

- Level II and Level III Written Communications Courses may be used to satisfy requirements anywhere else in a student's program of study where they may apply. The credits are counted only in one area.
- Two electives must be chosen from the following courses: BIO 311, 312, 313, 316, 340, 400, 406, 407, 408, 409, 411, 412, and 416. At least one of these must be a 400 level course, one elective is to be a general elective (any 300-400 course not otherwise restricted)
- + This elective within the major is to be chosen from 300 to 400 level courses, exclusive of BIO 304, 324, and 328.

A maximum of 4 credits from BIO 407, 408, 416, 418, or 422 may be used to fulfill one Biology elective; additional credits will count as Free Electives.
 The sequence can be either PHS 211A and 212A or PHS 221 and 222

The sequence can be either PHS 211A and 212A or PHS 221 and 222.
 COMPETENCIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS
 GENERAL EDUCATION CATEGORIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS

Exceptions in the timing of courses will be made for transfer students

Total credits for graduation: 120



Student ID:

Date Admitted Into Major:

# **BACHELOR OF SCIENCE**

BIOLOGY

BIOTECHNOLOGY CONCENTRATION

#### Competencies ☐ ◆ Basic College Math ☐ ◆ Reading Comprehension ♣General Education Categories (34-35 credits total) First Year Seminar ♦FYS 3 ♦W-I Written Communication - Level I 3 +OC **Oral Communication** 3 PGR Personal Growth & Responsibility 3 CEA Creative Expression & Appreciation 3 WC World Cultures 3 HP The Human Past 3 CS **Contemporary Society** 3 3-4 Scientific SR Reasoning: # SR Lab course 4 Quantitative Reasoning QR 3 **‡** Written Communication (Level II and Level III) W-II Written Communication - Level II W-III Written Communication - Level III

**GENERAL EDUCATION REQUIREMENTS** 

Free Electives (12 credit minimum total) May be necessary to take additional credits to attain the minimum 120 credits required for graduation depending on choices made for general education or minor selection.

#### (Required 41 credits) Introduction to Organisms BIO 131 4 Introduction to Cells BIO 132 4 BIO 208 **Environmental Problems** 3 BIO 212 Cell Biology 4 BIO 220 **Evolutionary Morphology** 3 BIO 313 Molecular Biology 4 BIO 317 Methods in Biotechnology OR 4 Advanced Laboratory Elective BIO 402 Genetics 4 Microbiology BIO 406 4 BIO 409 **Biological Chemistry** 4 BIO 411 4 Immunology BIO 415 **Biology Seminar** 3

COURSES IN MAJOR (44-45 credits total)

Electives (3-4 credits)					
† BIO	E	Biology Elective	3-4		
▼ R	equirea	Support Courses (11-12 credit	s total)		
	110	Pre-calculus	_		
MAT	or		3-4		
	220	Calculus I			
	211A	College Physics I			
◊ PHS	or		4		
	221	General Physics I			
	212A	Physics II			
◊ PHS	or	-	4		
	222	General Physics II			

Required Minor: Chemistry (16 credits total)

CHE	130	General Chemistry I	4	
CHE	131	General Chemistry II	4	
CHE	212	Organic Chemistry I	4	
CHE	213	Organic Chemistry II	4	

Students may choose to use support courses to satisfy general education categories, but may not be required to do so. Note: If a course is used to satisfy two or more requirements (for example, a support course and Scientific Reasoning requirement), the credits are counted in only one place. Using a course to satisfy more than one requirement does not reduce the credit total required for graduation.

Courses used to satisfy the general education requirements of the university must be taken from a minimum of six different academic disciplines. First Year Seminar and Level I Written Communications courses are exempt from this restriction. Courses may not be used to fulfill both major discipline and general education requirements.

# These Scientific Reasoning General Education Category courses do not have to be a sequence or be from the same discipline

Level II and Level III Written Communications Courses may be used to satisfy requirements anywhere else in a student's program of study where they may apply. The credits are counted only in one area.

This elective must be chosen from the following courses: BIO 311, BIO 312, 314, 316, 400, 407, 408, 412, and 416. A maximum of 4 credits from BIO 407, 408, 416, 418, 420, or 422 may be used to fulfill one Biology elective; additional credits will count as Free Electives.

For the Advanced Laboratory Elective, students may choose from BIO 416, 312N, CHE 340, CHE 420. Students are strongly encouraged to complete a Biology internship (BIO 416). Internship placements are not made by the University. Interested students should speak with their academic advisor and Career Services for coaching in the internship search process, starting in fall of the sophomore year. Note: some internship programs have a minimum GPA requirement.

The sequence can be either PHS 211A and 212A, or PHS 221 and 222.
 COMPETENCIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS

♦ GENERAL EDUCATION CATEGORIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS

Exceptions in the timing of courses will be made for transfer students

Total credits for graduation: 120



Student ID:

Date Admitted Into Major:

# **BACHELOR OF SCIENCE**

### BIOLOGY

#### ENVIRONMENTAL BIOLOGY CONCENTRATION

#### GENERAL EDUCATION REQUIREMENTS

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# COURSES IN MAJOR 43-45 credits total)

	Competencies
College Math	

□ ◆ Reading Comprehension

Basic

#### ★General Education Categories (34-35 credits total)

		• •			,	
♦FYS	First Year Se	minar			3	
♦W-I	Written Comr	nunication - Level I			3	
+OC	Oral Commun	nication			3	
PGR	Personal Gro	wth & Responsibility			3	
CEA	Creative Expr	ression & Appreciation			3	
WC	World Culture	es			3	
HP	The Human F	Past			3	
CS	Contemporar	y Society			3	
SR	Scientific				3-4	
SK	Reasoning:				4	
QR	Quantitative F	Reasoning			3	
# Written Communication (Level II and Level III)						
W-II	Written Comr	nunication - Level II				]
W-III	Written Comr	nunication - Level III				]

#### Free Electives (0 credits minimum total)

May be necessary to take additional credits to attain the minimum 120 credits required for graduation depending on choices made for general education or minor selection.

	Required (40-41 credits)					
BIO	131	Introduction to Organisms	4			
BIO	132	Introduction to Cells	4			
BIO	208	Environmental Problems	3			
BIO	212	Cell Biology	4			
BIO	220	Evolutionary Morphology	3			
BIO		Plant Biology Elective	4			
BIO		Animal Biology Elective	3-4			
BIO	320	General Ecology	4			
BIO	406	Microbiology				
		or	4			
BIO	409	Biochemistry				
BIO	402	Genetics	4			
BIO	415	Biology Seminar	3			

	Electives (3-4 credits)		
*BIO	Biology elective	3-4	

#### † Required Support Courses (13-15 credits total)

	110	Pre-calculus		
MAT	or		3-4	
	220	Calculus I		
	211A	College Physics I		
PHS	or		4	
	221	General Physics I		
		Elective (GROUP A)	3-4	
		Elective (GROUP B)	3	

#### Required Minor: Chemistry (16 credits total)

CHE	130	General Chemistry I	4	
CHE	131	General Chemistry II	4	
CHE	212	Organic Chemistry I	4	
CHE	213	Organic Chemistry II	4	

Students may choose to use support courses to satisfy general education categories, but may not be required to do so. Note: If a course is used to satisfy two or more requirements (for example, a support course and Scientific Reasoning requirement), the credits are counted in only one place. Using a course to satisfy more than one requirement does not reduce the credit total required for graduation.

Courses used to satisfy the general education requirements of the university must be taken from a minimum of six different academic disciplines. First Year Seminar and Level I Written Communications courses are exempt from this restriction. Courses may not be used to fulfill both major discipline and

general education requirements.

# These Scientific Reasoning General Education Category courses do not have to be a sequence or be from the same discipline.

Level II and Level III Written Communications Courses may be used to satisfy requirements anywhere else in a student's program of study where they may apply. The credits are counted only in one area.

The Biology Elective must be chosen from 300 to 400 level courses, exclusive of BIO 304, 324 and 328. A maximum of 4 credits from BIO 407, 408, 416, + 418, 420, or 422 may be used to fulfill one Biology Elective; additional credits will count as Free Electives.

Electives within the major are to be chosen from the following (One course from Group A and a second course from either Group A or Group B): Group A - GLS210, GLS212, GLS221, GLS330, GLS334, GLS342, GLS362, GPH222, GPH245, GPH264, GPH282P, GPH285P, GPH301, GPH314, GPH371, GPH376P, GPH383P.

Group B - ECO319, IDS220, IDS325, PHL224, PHL314, POL304, POL319	).
♦ COMPETENCIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS	♦ GENERAL EDUCATION CATEGORIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS
Exceptions in the timing of course	as will be made for transfer students

Exceptions in the timing of courses will be made for transfer students

Total credits for graduation: 120-122

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Student ID:

Date Admitted Into Major:

# BACHELOR OF SCIENCE BIOLOGY

<sup>†</sup> MEDICAL TECHNOLOGY CONCENTRATION

#### GENERAL EDUCATION REQUIREMENTS

Competencies

☐ ◆ Basic College Math

☐ ◆ Reading Comprehension

#### ★General Education Categories (34-35 credits total)

		•			,	
FYS	First Year Se	minar			3	
♦W-I	Written Comm	nunication - Level I			3	
<b>♦</b> 0C	Oral Commun	nication			3	
PGR	Personal Gro	wth & Responsibility			3	
CEA	Creative Expr	ession & Appreciation			3	
WC	World Culture	S			3	
HP	The Human F	Past			3	
CS	Contemporar	y Society			3	
SR	Scientific				3-4	
SK	Reasoning:				4	
QR	Quantitative F	Reasoning			3	
<b>‡</b> Written Communication (Level II and Level III)						
W-II	Written Comm	nunication - Level II				
W-III	Written Comm	nunication - Level III				]

	Free Electives (3 credits minimum total) essary to take additional credits to attain the minimum graduation depending on choices made for general ed minor selection.	

		Required (46 credits)		
BIO	131	Introduction to Organisms	4	
BIO	132	Introduction to Cells	4	
BIO	200	Anatomy and Physiology I	4	
BIO	201	Anatomy and Physiology II	4	
BIO	208	Environmental Problems	3	
BIO	212	Cell Biology	4	
BIO	411	Immunology		
		OR		
BIO	313	Molecular Biology		
		OR	4	
BIO	316	Parasitology		
BIO	402	Genetics	4	
BIO	406	Microbiology	4	
BIO	409	Biological Chemistry	4	
BIO	415	Biology Seminar	3	

COURSES IN MAJOR (49-50 credits total)

	¶ Elective (3-4 c	redits
BIO	Biology elective	

#### ▼ Required Support Courses (15-16 credits total)

3-4

MAT	110	Pre-calculus		
IVIAT			3-4	
	or	or	3-4	
	220	Calculus I		
◊ PHS	211A	College Physics I		
	or	or	4	
	221	General Physics I		
◊ PHS	212A	College Physics II		
	or	or	4	
	222	General Physics II		
CHE	420	Instrumental Analysis	4	

#### Required minor Chemistry (16 credits total)

CHE	130	General Chemistry I	4	
CHE	131	General Chemistry II	4	
CHE	212	Organic Chemistry I	4	
CHE	213	Organic Chemistry II	4	

♦ GENERAL EDUCATION CATEGORIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS

Students may choose to use support courses to satisfy general education categories, but may not be required to do so. Note: If a course is used to satisfy two or more requirements (for example, a support course and Scientific Reasoning requirement), the credits are counted in only one place. Using a course to satisfy more than one requirement does not reduce the credit total required for graduation.

Courses used to satisfy the general education requirements of the university must be taken from a minimum of six different academic disciplines. First Year Seminar and Level I Written Communications courses are exempt from this restriction. Courses may not be used to fulfill both major discipline and general education requirements.

These Scientific Reasoning General Education Category courses do not have to be a sequence or be from the same discipline.

Level II and Level III Written Communications Courses may be used to satisfy requirements anywhere else in a student's program of study where they may apply. The credits are counted only in one area.

 It is strongly recommended that students seek medical laboratory experience through entry-level work or an internship in the sophomore or junior year.
 Internship placements are *not* made by the university. Interested students should speak to their Academic Advisor and Career Services for coaching. Note: some external internships require a GPA minimum for applicants.

Electives within the major are to be chosen from 300 to 400 level courses, exclusive of BIO 304, 324, and 328. A maximum 4 credits from BIO 407, 408 416,418, 420, or 422 may be used to fulfill one Biology elective; additional credits will count as Free Electives. Secondary Education minors must elect BIO 320, and one course in Geological Science.

<sup>V</sup> The sequence can be either PHS 211A and 212A, or PHS 221 and 222.

♦ COMPETENCIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS

Exceptions in the timing of courses will be made for transfer students

Total credits for graduation: 120

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# Esalem | STATE UNIVERSITY

Name:

Student ID: \_\_\_\_\_ Date Admitted Into Major:

# **BACHELOR OF SCIENCE**

## BIOLOGY

MARINE BIOLOGY CONCENTRATION

#### GENERAL EDUCATION REQUIREMENTS

COURSES IN MAJOR (47-49 credits total)

#### Required (44-45 credits)

Competencies
c College Math
ding Comprehension

☐ ◆ Basi

#### ★General Education Categories (34-35 credits total)

♦FYS	First Year Sei	minar			3	
♦W-I	Written Communication - Level I				3	
+OC	Oral Commun	nication			3	
PGR	Personal Gro	wth & Responsibility			3	
CEA	Creative Expression & Appreciation				3	
WC	World Culture	S			3	
HP	The Human Past				3	
CS	Contemporary Society				3	
SR	Scientific				3-4	
SK	Reasoning:				4	
QR	Quantitative F	Reasoning			3	
	‡ Written C	<b>‡</b> Written Communication (Lev		Level II	I)	
W-II	Written Comn	nunication - Level II				
W-III	Written Comn	nunication - Level III				

#### Free Electives (8 credit minimum total)

May be necessary to take additional credits to attain the minimum 120 credits required for graduation depending on choices made for general education or minor selection

	Third Selection.	

		Required (44-45 credits)		
BIO	131	Introduction to Organisms	4	
BIO	132	Introduction to Cells	4	
BIO	208	Environmental Problems	3	
BIO	212	Cell Biology	4	
BIO	220	Evolutionary Morphology	3	
BIO	310	Invertebrate Zoology	4	
BIO	322	Biological Oceanography	4	
BIO	326	Marine Botany	4	
BIO	323 or	Fish Biology	3-4	
	341	Biology of Marine Mammals		
† BIO		Cell/Molecular or Structure/Function elective	4	
BIO	402	Genetics	4	
BIO	415	Biology Seminar	3	

#### Electives (3-4 credits)

¶ BIO	Biology elective	3-4	

#### **∇**♥ Required Support Courses (11-12 credits total)

	110	Pre-calculus	-	
MAT	or		3-4	
	220	Calculus I		
	211A	College Physics I		
◊ PHS	or		4	
	221	General Physics I		
	212A	College Physics II		
◊ PHS	or		4	
	222	General Physics II		

#### Required Minor: Chemistry (16 credits total)

CHE	130	General Chemistry I	4
CHE	131	General Chemistry II	4
CHE	212	Organic Chemistry I	4
CHE	213	Organic Chemistry II	4

Students may choose to use support courses to satisfy general education categories, but may not be required to do so. Note: If a course is used to satisfy two or more requirements (for example, a support course and Scientific Reasoning requirement), the credits are counted in only one place. Using a course to satisfy more than one requirement does not reduce the credit total required for graduation.

Courses used to satisfy the general education requirements of the university must be taken from a minimum of six different academic disciplines. First Year
 Seminar and Level I Written Communications courses are exempt from this restriction. Courses may not be used to fulfill both major discipline and general education requirements.

# These Scientific Reasoning General Education Category courses do not have to be a sequence or be from the same discipline.

- Level II and Level III Written Communications Courses may be used to satisfy requirements anywhere else in a student's program of study where they may apply. The credits are counted only in one area.
- Electives within the major are to be chosen from 300 to 400 level courses, exclusive of BIO 304, 324, and 328. A maximum 4 credits from BIO 407, 408N, 416, 418, 420 or 422 may be used to fulfill one BIO Elective; additional credits will count as Free Electives. Secondary Education minors must select BIO 320, and one course in Geological Sciences.

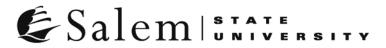
† The Cell/Molecular or Structure/Function elective must be chosen from 400-level courses AND have a laboratory.

The sequence can be either PHS 211A and 212A, or Physics 221 and 222.

COMPETENCIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS	♦ GENERAL EDUCATION CATEGORIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS
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Exceptions in the timing of courses will be made for transfer students

Total credits for graduation: 120



□ + B

Name:

Student ID:

Date Admitted Into Major:

# **BACHELOR OF SCIENCE**

## BIOLOGY

#### NUCLEAR MEDICINE TECHNOLOGY CONCENTRATION

#### **GENERAL EDUCATION REQUIREMENTS**

COURSES IN MAJOR (60) credits total)

#### Required (60 credits)

Competencies	
Basic College Math	
Reading Comprehension	I

#### \*General Education Categories (34-35 credits total)

♦FYS	First Year Seminar				3	
♦W-I	Written Communication - Level I				3	
+OC	Oral Commun	nication			3	
PGR	Personal Gro	wth & Responsibility			3	
CEA	Creative Expression & Appreciation				3	
WC	World Cultures				3	
HP	The Human Past				3	
CS	Contemporary Society				3	
SR	Scientific				3-4	
SK	Reasoning:				4	
QR	Quantitative Reasoning				3	
	‡ Written C	ommunication (Lev	el II and	Level I	II)	
W-II	Written Communication - Level II					]
W-III	Written Communication - Level III					

Free Electives (0 credits minimum total) May be necessary to take additional credits to attain the minimum 120 credits required for graduation depending on choices made for general education or minor selection

Requirea (60 creaits)				
BIO	105	Biological Systems	4	
BIO	200	Anatomy & Physiology 1	4	
BIO	201	Anatomy & Physiology 2	4	
BIO	212	Cell Biology	4	
NMT	200	Introduction To NMT	1	
BIO	340	General Pathology	3	
BIO	402	Genetics	4	
BIO	409	Biological Chemistry	4	
BIO	411	Immunology	4	
NMT	401A	NMT Practicum I	3	
NMT	402	NMT Practicum II	4	
NMT	403	NMT Practicum III	4	
NMT	405	Nuclear Medicine Tech I	4	
NMT	411	Nuclear Medicine Tech II	4	
NMT	415	NMT Seminar	1	
NMT	420	Nuclear Instrumentation	4	
NMT	435	Advanced Imaging & Therapeutics	4	

#### Required Support Courses (17-18 credits total)

	•	•• •		
<b>⊘PHS</b>	211A	College Physics I	4	
<b>⊘PHS</b>	212A	College Physics II	4	
	110	Pre-calculus		
MAT	or		3-4	
	220	Calculus I		
PHS	315	Introduction To Radiation	3	
1110	515	Physics	5	
PHL	218	Medical Ethics	3	

#### Required Minor: <u>Chemistry</u> (16 credits total)

CHE	130	General Chemistry I	4	
CHE	131	General Chemistry II	4	
CHE	212	Organic Chemistry I	4	
CHE	213	Organic Chemistry II	4	

Students may choose to use support courses to satisfy general education categories, but may not be required to do so. Note: If a course is used to satisfy two or more requirements (for example, a support course and Scientific Reasoning requirement), the credits are counted in only one place. Using a course to satisfy more than one requirement does not reduce the credit total required for graduation.

Courses used to satisfy the general education requirements of the university must be taken from a minimum of six different academic disciplines. First Year Seminar and Level I Written Communications courses are exempt from this restriction. Courses may not be used to fulfill both major discipline and general education requirements.

Ħ These Scientific Reasoning General Education Category courses do not have to be a sequence or be from the same discipline.

Level II and Level III Written Communications Courses may be used to satisfy requirements anywhere else in a student's program of study where they may ± apply. The credits are counted only in one area.

The sequence can be chosen from PHS211A and PHS212A, or PHS221 and PHS222. 0

♦ COMPETENCIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS ♦ GENERAL EDUCATION CATEGORIES - TO BE COMPLETED WITHIN THE FIRST 30 CREDITS

Exceptions in the timing of courses will be made for transfer students

Total credits for graduation: 120 - 129