

## Bachelor of Science - Concentration in Marine Biology & Limnology

Note: All **BIOL** & **PHYS** prerequisites must be passed with a **C- or better**, unless stated otherwise. All **CHEM** & **MATH** prerequisites must be passed with a **C or better**, unless stated otherwise.

Requirement	if taken	Course		Units	Prerequisites by ID
		ID	Title		
<b>Division Courses</b>					
<i>Courses may be transferable from community college; check <a href="http://ASSIST.org">ASSIST.org</a> for more information</i>					
All Required		<b>BIOL 230</b>	Introductory Biology 1	5	None
		<b>BIOL 240</b>	Introductory Biology 2	5	BIOL 230
		<b>CHEM 115</b>	General Chemistry 1 + Lab	5	see bulletin: <a href="http://bulletin.sfsu.edu/courses/chem/">http://bulletin.sfsu.edu/courses/chem/</a>
		<b>CHEM 130</b>	General Organic Chemistry	3	CHEM 115
<b>CHOOSE 16-17 UNITS</b>		<b>CHEM 215/216</b>	General Chemistry 2 + Lab	3/2	CHEM 115, CHEM 215 (concurrent OK for lab)
		<b>PHYS 111/112</b>	General Physics 1 + Lab	3/1	MATH 198 or MATH 199
		<b>PHYS 121/122</b>	General Physics 2 + Lab	3/1	PHYS 111, PHYS 112
		<b>MATH 226</b>	Calculus 1	4	see bulletin: <a href="http://bulletin.sfsu.edu/courses/math/">http://bulletin.sfsu.edu/courses/math/</a>
		<b>MATH 227</b>	Calculus 2	4	MATH 226
<b>Total Units for Lower Division</b>					
<b>Division Courses</b>					
<i>Courses do not need to be taken in order, only requirement is taking the prerequisites</i>					
All Required		<b>BIOL 337</b>	Evolution	3	BIOL 230, BIOL 240, BIOL 355
		<b>BIOL 355</b>	Genetics	3	BIOL 230, BIOL 240, CHEM 115 (C- or better)
		<b>BIOL 458</b>	Biometry	4	One college-level Biology course
<b>CHOOSE 1 ONLY</b>		<b>BIOL 525</b>	Plant Physiology	3	GE A2, BIOL 230, BIOL 240
		<b>BIOL 630</b>	Animal Physiology	3	BIOL 230, BIOL 240, (CHEM 130 - OR- CHEM 233)
<b>CHOOSE 3-5 UNITS</b>		<b>BIOL 534</b>	Wetland Ecology	4	BIOL 230, BIOL 240
		<b>BIOL 580</b>	Limnology	3	BIOL 230, BIOL 240, CHEM 215, CHEM 216
		<b>BIOL 582</b>	Biological Oceanography	4	BIOL 230, BIOL 240
		<b>BIOL 585**</b>	Marine Ecology	3	BIOL 230, BIOL 240
		<b>BIOL 586**</b>	Marine Ecology Lab	2	BIOL 230, BIOL 240
Electives: <b>CHOOSE 14-17 UNITS</b>		<b>BIOL 502</b>	Biology of the Algae	3	BIOL 230, BIOL 240
		<b>BIOL 526</b>	Plant Molecular Physiology Lab	2	BIOL 230, BIOL 240, CHEM 130
		<b>BIOL 532</b>	Restoration Ecology	3	BIOL 230, BIOL 240
		<b>BIOL 555</b>	Marine Invertebrate Zoology	4	BIOL 230, BIOL 240
		<b>BIOL 556</b>	Natural History of Marine Invertebrates	4	BIOL 230, BIOL 240
		<b>BIOL 570GW</b>	Biology of Fishes	4	GE A2, BIOL 230, BIOL 240
		<b>BIOL 575</b>	Fisheries Biology	3	BIOL 570GW
		<b>BIOL 584</b>	Marine Microbial Ecology Lab	1	CHEM 115
		<b>BIOL 585**</b>	Marine Ecology	3	BIOL 230, BIOL 240
		<b>BIOL 586**</b>	Marine Ecology Lab	2	BIOL 230, BIOL 240
		<b>BIOL 631GW</b>	Animal Physiology Lab	4	GE A2, (BIOL 612 -OR- BIOL 630)
		<b>CHEM 680</b>	Chemical Oceanography	3	CHEM 215
		<b>ERTH 642</b>	Watershed Assessment	4	(GEOG 101 -OR- EARTH 210), GEOG 603, MATH 199
		<b>MSCI 312-344</b>	Any course w/o duplicating courses taken		
	<b>ERTH 434</b>	Coastal Processes	3	MATH 226, (PHYS 111 -OR- PHYS 220)	
<b>Substitutions,</b>					

if any				

**Total Units for Upper Division**  
**Total Units Needed for Degree**

**Notes:**

\*\* can be an elective if not used to fulfill other upper division major requirement

At times, CHEM 130 can be substituted with the CHEM 233/335 series. Ask your advisor for more information.