# B.S.M.A.S. in Marine Biology and Ecology

Curriculum Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Marine Science</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSC 111</td>
<td>Introduction to Marine Science</td>
<td>3</td>
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<tr>
<td>MSC 112</td>
<td>Introduction to Marine Science Lab</td>
<td>1</td>
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<tr>
<td>MSC 230</td>
<td>Introduction to Marine Biology</td>
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<tr>
<td>MSC 232</td>
<td>Introduction to Marine Biology Laboratory</td>
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<tr>
<td><strong>Marine Biology</strong></td>
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<tr>
<td>Select one of the following:</td>
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<tr>
<td>BIL 330</td>
<td>Ecology</td>
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<tr>
<td>MSC 366</td>
<td>Tropical Coastal Ecosystems</td>
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<tr>
<td>MSC 422</td>
<td>Marine Ecology of the Galapagos</td>
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<tr>
<td>Select one of the following:</td>
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</tr>
<tr>
<td>BIL 250</td>
<td>Genetics</td>
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<tr>
<td>MSC 318</td>
<td>Ecological Genetics</td>
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<tr>
<td>Select one of the following:</td>
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<td>3-4</td>
</tr>
<tr>
<td>MSC 323</td>
<td>Invertebrate Zoology</td>
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<tr>
<td>MSC 329</td>
<td>Marine Vertebrate Zoology</td>
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<tr>
<td>Approved Upper-level animal diversity course</td>
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<tr>
<td>Select one of the following:</td>
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<td>3-4</td>
</tr>
<tr>
<td>GSC 111</td>
<td>Earth System History</td>
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<tr>
<td>MSC 215 &amp; MSC 216</td>
<td>Chemical Oceanography and Chemical Oceanography Laboratory</td>
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</tr>
<tr>
<td>MSC 301 &amp; MSC 302</td>
<td>Introduction to Physical Oceanography and Introduction to Physical Oceanography Lab</td>
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<tr>
<td>MSC 424</td>
<td>Origin and Geology of the Galapagos Islands.</td>
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<tr>
<td>Select 12 credit hours of approved electives in Marine Science</td>
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<tr>
<td><strong>Other Required Courses</strong></td>
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<tr>
<td>BIL 150</td>
<td>General Biology</td>
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<tr>
<td>BIL 151</td>
<td>General Biology Laboratory</td>
<td>1</td>
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<tr>
<td>BIL 160</td>
<td>Evolution and Biodiversity</td>
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<td>BIL 161</td>
<td>Evolution and Biodiversity Laboratory</td>
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<tr>
<td>BIL 255</td>
<td>Cellular and Molecular Biology</td>
<td>3</td>
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<tr>
<td>BIL 360</td>
<td>Comparative Physiology</td>
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<tr>
<td>Select 9 credit hours of approved electives in Biological Sciences</td>
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<tr>
<td>Select one of the following options:</td>
<td>12-15</td>
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<tr>
<td>Option #1:</td>
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<tr>
<td>CHM 111</td>
<td>Principles of Chemistry I</td>
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Option #2:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>CHM 121</td>
<td>Chemistry for the Biosciences I</td>
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</tr>
<tr>
<td>CHM 113</td>
<td>Chemistry Laboratory I</td>
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<tr>
<td>CHM 221</td>
<td>CHM211 Chemistry for the Biosciences II</td>
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<tr>
<td>CHM 114</td>
<td>Chemistry Laboratory II</td>
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<tr>
<td>CHM 222</td>
<td>CHM212 Chemistry for the Biosciences III</td>
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<tr>
<td>CHM 205</td>
<td>Organic Chemistry Laboratory I</td>
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<tr>
<td>ENG 105</td>
<td>English Composition I</td>
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<tr>
<td>ENG 107</td>
<td>English Composition II: Science and Technology</td>
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<tr>
<td>or ENG 106</td>
<td>English Composition II</td>
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<tr>
<td>Select one of the following options:</td>
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<tr>
<td>Option #1</td>
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<tr>
<td>MTH 161</td>
<td>Calculus I</td>
<td></td>
</tr>
<tr>
<td>or MTH 171</td>
<td>Calculus I</td>
<td></td>
</tr>
<tr>
<td>MTH 162</td>
<td>Calculus II</td>
<td></td>
</tr>
<tr>
<td>or MTH 172</td>
<td>Calculus II</td>
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<tr>
<td>Option #2</td>
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<tr>
<td>MTH 140</td>
<td>Calculus Concepts with Foundations A</td>
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<tr>
<td>MTH 141</td>
<td>Calculus Concepts with Foundations B</td>
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<tr>
<td>MTH 162</td>
<td>Calculus II</td>
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<tr>
<td>Select one of the following:</td>
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<tr>
<td>MSC 204</td>
<td>Environmental Statistics</td>
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<tr>
<td>MTH 224</td>
<td>Introduction to Probability and Statistics</td>
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<tr>
<td>Option 1:</td>
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<tr>
<td>PHY 201</td>
<td>University Physics I for the Sciences</td>
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<tr>
<td>PHY 106</td>
<td>College Physics Laboratory I</td>
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<tr>
<td>PHY 202</td>
<td>University Physics II for the Sciences</td>
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<tr>
<td>PHY 108</td>
<td>College Physics Laboratory II</td>
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<tr>
<td>Option 2:</td>
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<tr>
<td>PHY 205</td>
<td>University Physics I</td>
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<tr>
<td>PHY 206</td>
<td>University Physics II</td>
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<tr>
<td>PHY 207</td>
<td>University Physics III</td>
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<tr>
<td>PHY 208</td>
<td>University Physics II Lab</td>
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<tr>
<td>or PHY 209</td>
<td>University Physics III Lab</td>
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<td>Option 3:</td>
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<tr>
<td>PHY 101</td>
<td>College Physics I</td>
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<tr>
<td>PHY 106</td>
<td>College Physics Laboratory I</td>
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<tr>
<td>PHY 102</td>
<td>College Physics II</td>
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<tr>
<td>PHY 108</td>
<td>College Physics Laboratory II</td>
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</table>
**Electives**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>Arts and Humanities Cognate Courses</td>
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<td>9</td>
</tr>
<tr>
<td>People and Society Cognate Courses</td>
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<td>9</td>
</tr>
<tr>
<td>300+ Level Elective</td>
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<tr>
<td>Additional Elective</td>
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</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
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<td>120-129</td>
</tr>
</tbody>
</table>

1. Must be at the 300-level or higher. MSC 204 does not satisfy the MSC elective requirement but does satisfy the Statistics requirement.
2. Students are encouraged to take Research Fundamentals (MSC 319) in their Sophomore year.
3. Biological Science electives include but are not limited to BIL, BMB, MBE, MIC, MSC, and NEU. For the Biology dual major, at least one BIL elective must be a CAPSTONE course.
4. Option 1 is recommended for Physics.

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**Suggested Plan of Study**

### Freshman Year

**Fall**
- MSC 111 Introduction to Marine Science
- MSC 112 Introduction to Marine Science Lab
- BIL 150 General Biology
- BIL 151 General Biology Laboratory
- ENG 105 English Composition I
- MTH 161 Calculus I

**Credit Hours** 16

**Spring**
- BIL 160 Evolution and Biodiversity
- BIL 161 Evolution and Biodiversity Laboratory
- CHM 111 Principles of Chemistry I
- CHM 113 Chemistry Laboratory I
- ENG 107 English Composition II: Science and Technology
- MTH 162 Calculus II

**Credit Hours** 16

### Sophomore Year

**Fall**
- MSC 230 Introduction to Marine Biology
- MSC 232 Introduction to Marine Biology Laboratory
- BIL 255 Cellular and Molecular Biology
- CHM 112 Principles of Chemistry II
- CHM 114 Chemistry Laboratory II
- Elective #1

**Credit Hours** 14

**Spring**
- MSC 204 Environmental Statistics
- CHM 201 Organic Chemistry I (Lecture)
- CHM 205 Organic Chemistry Laboratory I
- GSC 111 Earth System History
- MSC 319 Research Fundamentals

**Credit Hours** 1

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### Junior Year

**Fall**
- MSC 366 or BIL 330 Tropical Coastal Ecosystems or Ecology
- BIL 360 Comparative Physiology
- PHY 201 University Physics I for the Sciences
- PHY 106 College Physics Laboratory I
- Elective #3
- Elective #4

**Credit Hours** 17

### Senior Year

**Fall**
- MSC Course
- MSC Course
- Biological Science Elective
- Biological Science Elective
- Elective #7

**Credit Hours** 17

**Spring**
- MSC 411 & MSC 412 Projects in Marine Science and Undergraduate Thesis in Marine Science
- MSC Course
- Biological Science Elective
- Elective #8

**Credit Hours** 12

**Total Credit Hours** 122

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* 8 elective courses must include:
  - 3 Arts and Humanities Cognate courses
  - 3 People and Society Cognate courses
  - 1 Course (3 credits) at the 300+ level

1. Recommended electives to take for the Marine Biology and Ecology major.