Overall Major Requirements

- 42-60 non-duplicative biology credits
- A minimum of 36 senior-level credits
- A minimum of 18 credits at the 300- or 400-level
- At least 6 credits at the 400-level
- All Biology majors complete the same 12 credits in Specific Major Requirements, and an additional 30 to 48 credits in senior-level courses which are determined by a student’s choice of either the (1) General Biology Major, or one of the (2) Molecular/Cellular or (3) Ecology and Diversity Streams

Declaration Process

The Biology major is a competitive major. Students must complete BIOL 107 and BIOL 108 plus one of BIOL 207 or BIOL 208 with no grade lower than C-. They must also have either completed or be enrolled in the remaining BIOL 207 or 208 course during the winter term when declarations close.

The number of new seats available in the Biology major will be determined by the Biology department annually. Students will submit their declaration by January 15. Students who apply will be ranked by their admissions GPA, which is calculated using their most recent 24 credits of university-level course work, without breaking up a term. The applicants with the highest GPA will be admitted to the program first, until no seats remain. Students will be notified of the success or denial of their application to the Biology major no later than February 1.

Students who have completed the above criteria and submit their declaration prior to January 15, may be considered and have their declaration processed before the deadline.

Required Courses for the Biological Sciences Major

Biological Science majors are required to complete the following courses:

- CHEM 101 University Chemistry I
- CHEM 102 University Chemistry II
- STAT 151 Introduction to Applied Statistics OR STAT 161 Applied Statistics for the Social Sciences

Specific Major Requirements (Required for all Majors) 12 Credits

- BIOL 107 Introduction to Cell Biology
- BIOL 108 Organisms in Their Environment
- BIOL 207 Principles of Genetics
- BIOL 208 Principles of Ecology

Choose one of the following for the remaining 30-48 credits:

(1) General Biological Sciences Requirements 30 to 48 Credits

Students may choose from junior- and senior-level Biochemistry, Biology, Botany, Genetics, Zoology or SCIE 201

- ___________
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### Molecular/Cellular Stream Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BICM 200</td>
<td>Introductory Biochemistry</td>
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<tr>
<td>BICM 310</td>
<td>Intermediary Metabolism</td>
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<tr>
<td>BICM 320</td>
<td>Structure and Function of Biomolecules</td>
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<tr>
<td>BICM 330</td>
<td>Nucleic Acid Biochemistry</td>
<td></td>
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<tr>
<td>BIOL 201</td>
<td>Eukaryotic Cellular Biology I</td>
<td></td>
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<tr>
<td>BIOL 205</td>
<td>Molecular Biology</td>
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<tr>
<td>BIOL 211</td>
<td>Introduction to Microbiology</td>
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<tr>
<td>BIOL 300</td>
<td>Eukaryotic Cellular Biology II</td>
<td></td>
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<tr>
<td>BIOL 313</td>
<td>Animal Developmental Biology</td>
<td></td>
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<tr>
<td>BIOL 315</td>
<td>History of Biology</td>
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<tr>
<td>BIOL 321</td>
<td>Mechanisms of Evolution</td>
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<tr>
<td>BIOL 323</td>
<td>Introduction to Population Genetics</td>
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<tr>
<td>BIOL 337</td>
<td>Biostatistics and Research Design</td>
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<tr>
<td>BIOL 413</td>
<td>Advanced Animal Developmental Biology</td>
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</tr>
</tbody>
</table>

Choose minimum of 30 credits from the following Molecular/Cellular courses

- BICM 200 Introductory Biochemistry  
- BICM 310 Intermediary Metabolism  
- BICM 320 Structure and Function of Biomolecules  
- BICM 330 Nucleic Acid Biochemistry  
- BIOL 201 Eukaryotic Cellular Biology I  
- BIOL 205 Molecular Biology  
- BIOL 211 Introduction to Microbiology  
- BIOL 300 Eukaryotic Cellular Biology II  
- BIOL 313 Animal Developmental Biology  
- BIOL 315 History of Biology  
- BIOL 321 Mechanisms of Evolution  
- BIOL 323 Introduction to Population Genetics  
- BIOL 337 Biostatistics and Research Design  
- BIOL 413 Advanced Animal Developmental Biology  

Students can choose up to 18 credits in junior- and senior-level Biochemistry, Biology, Botany, Genetics, Zoology or SCIE 201:

- BICM 200 intro Biochem.  
- BICM 310 Metabolism  
- BICM 320 Biomolecules  
- BICM 330 Nucleic Acid Biochem.  
- BIOL 201 Eukaryotic Biochem. I  
- BIOL 205 Molecular Biochem.  
- BIOL 211 Microbio.  
- BIOL 300 Eukaryotic Biochem. II  
- BIOL 313 Animal Dev Biochem.  
- BIOL 315 History of Biochem.  
- BIOL 321 Evolution  
- BIOL 323 Pop. Genetics  
- BIOL 337 BioStat  
- BIOL 413 Animal Dev Biochem.  

### Ecology and Diversity Stream Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOL 310</td>
<td>Fresh Water Ecology</td>
<td></td>
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<tr>
<td>BIOL 312</td>
<td>Terrestrial Ecology</td>
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<tr>
<td>BIOL 314</td>
<td>Population Ecology</td>
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<tr>
<td>BIOL 315</td>
<td>History of Biology</td>
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<tr>
<td>BIOL 316</td>
<td>Community Ecology</td>
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<tr>
<td>BIOL 321</td>
<td>Mechanisms of Evolution</td>
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<tr>
<td>BIOL 323</td>
<td>Introduction to Population Genetics</td>
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<tr>
<td>BIOL 337</td>
<td>Biostatistics and Research Design</td>
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<tr>
<td>BIOL 361</td>
<td>Marine Biology</td>
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<tr>
<td>BIOL 365</td>
<td>Tropical Rainforest Ecology</td>
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<tr>
<td>BIOL 367</td>
<td>Conservation Biology</td>
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<tr>
<td>BIOL 371</td>
<td>Animal Behaviour</td>
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<tr>
<td>BIOL 410</td>
<td>Techniques in Field Ecology</td>
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<tr>
<td>BIOL 414</td>
<td>Invasion Ecology and Management</td>
<td></td>
</tr>
<tr>
<td>BIOL 422</td>
<td>Experimental Ecology</td>
<td></td>
</tr>
</tbody>
</table>

Choose minimum of 30 credits from the following Ecology and Diversity courses

- BIOL 310 Fresh Water Ecology  
- BIOL 312 Terrestrial Ecology  
- BIOL 314 Population Ecology  
- BIOL 315 History of Biology  
- BIOL 316 Community Ecology  
- BIOL 321 Mechanisms of Evolution  
- BIOL 323 Introduction to Population Genetics  
- BIOL 337 Biostatistics and Research Design  
- BIOL 361 Marine Biology  
- BIOL 365 Tropical Rainforest Ecology  
- BIOL 367 Conservation Biology  
- BIOL 371 Animal Behaviour  
- BIOL 410 Techniques in Field Ecology  
- BIOL 414 Invasion Ecology and Management  
- BIOL 422 Experimental Ecology  

Students can choose up to 18 credits in junior- and senior-level Biochemistry, Biology, Botany, Genetics, Zoology or SCIE 201:

- BIOL 310 Fresh Water Ecol.  
- BIOL 312 Terrestrial Ecol.  
- BIOL 314 Pop. Ecol.  
- BIOL 315 Hist. of Biol.  
- BIOL 316 Community Ecol.  
- BIOL 323 Pop. Gen.  
- BIOL 361 Marine Biol.  
- BIOL 365 Tropical Rainforest Ecol.  
- BIOL 367 Cons. Biol.  
- BIOL 371 Anim. Behaviour  
- BIOL 410 Field Ecol. Tech.  
- BIOL 414 Invasion Ecol. Mgmt  
- BIOL 422 Exp. Ecol.  

### Biological Sciences Major (42 to 60 credits)

Total Credits: 

Continued on next page
Important Planning Notes

1. Courses required for the major may be used to satisfy the breadth requirements in a Bachelor of Arts or Science degree. Please refer to the applicable degree planner for details.

2. Students are required to consult the MacEwan University academic calendar to ensure they meet prerequisites for all courses they enrol in.

3. **BIOL 107** and **BIOL 108** must be completed in the first year of a program and can be taken in either order.

4. All students majoring in Biological Sciences should take careful note of the term in which courses are offered; many essential senior-level Biological Sciences courses are offered only once a year. Some senior level courses are offered in alternate years.

5. For students interested in pursuing the Molecular/Cellular Biology stream, **BIOL 205** and **BIOL 207** should be completed in the second year of their program. For students interested in pursuing the Ecology/Diversity Biology stream, **BIOL 208** should be completed in the second year of their program.

6. Students interested in pursuing the Ecology/Diversity Biology stream are encouraged, but not required, to take **STAT 151** in their first year. While it is not a prerequisite for **BIOL 208**, it can be helpful with some of the material covered in the course.

7. **CHEM 101** and **CHME 103** are equivalent courses. Credit can be obtained in only one of the two courses.

8. **CHEM 102** and **CHME 105** are equivalent courses. Credit can be obtained in only one of the two courses.

9. Students may take **BIOL 495** and **BIOL 498** for credit a maximum of two times each, as long as the course topic is different each time they take either course.

10. Please keep in mind that course offerings will vary from academic year to academic year.

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Biological Sciences Course Offerings

Please refer to the academic calendar or MacEwan.ca/Science > Disciplines > Biological Sciences for further information regarding course offerings.