MacEwan UNIVERSITY

FACULTY OF ARTS AND SCIENCE

BIOLOGICAL SCIENCES MAJOR

2018/19 Academic Year

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.

For the 2018-19 declaration period only, students may get their declaration approved in the fall term if they meet all of the following criteria:

1. **Students have already completed BIOL 107, BIOL 108, and one of BIOL 207 or BIOL 208 with no grade lower than C-.**
2. **Students must also have completed or be enrolled in the remaining BIOL 207 or 208 during the fall or winter term when declarations close.**
3. **Students must have completed a minimum of 24 credits prior to the fall 2018 term with a minimum AGPA of 2.7/4.0.**

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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(2) Molecular/Cellular Stream Requirements — 30 to 48 Credits

- ☐ 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 421 Techniques in Mol. & Cell Biol.
- ☐ BIOL 430 Pathobiology Cell Disease
- ☐ BIOL 492 Field Placement
- ☐ BIOL 495 Special Topics
- ☐ BIOL 498 Advanced Independent Study
- ☐ GENE 317 Genetics and Society
- ☐ GENE 369 Genetic Analysis of Bacteria
- ☐ GENE 370 Genetic Analysis of Eukaryotes

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☐ 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 Devel. Biology
☐ GENE 400 Genome Organization
☐ GENE 404 Gene Regulation
☐ GENE 418 Human Genetics
☐ ZOOL 241 Animal Physiology I
☐ ZOOL 242 Animal Physiology II

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

☐ _____ ☐ _____ ☐ _____
☐ _____ ☐ _____ ☐ _____

(3) Ecology and Diversity Stream Requirements | 30 to 48 Credits

☐ 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
☐ BIOL 492 Field Placement
☐ BIOL 495 Special Topics
☐ BIOL 498 Advanced Independent Study
☐ BOTN 205 Fundamentals of Plant Biology
☐ BOTN 305 Plant Responses and Interactions
☐ ZOOL 224 Vertebrate Adaptations and Evolution
☐ ZOOL 241 Animal Physiology I
☐ ZOOL 242 Animal Physiology II
☐ ZOOL 250 Survey of the Invertebrates
☐ ZOOL 324 Comparative Anatomy or Vertebrates
☐ ZOOL 400 Aquatic Vertebrates
☐ ZOOL 401 Terrestrial Vertebrates
☐ ZOOL 425 Introductory Entomology
☐ ZOOL 452 Principles of Parasitism

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

☐ _____ ☐ _____ ☐ _____
☐ _____ ☐ _____ ☐ _____

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 steam, **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.

Biological Sciences Major (42 to 60 credits) **Total Credits: _____**

Biological Sciences Course Offerings

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