# Bachelor of Science – Biological Sciences Major – Data Science Minor – Post Diploma

## Four Year (120 credits)

**2024/2025** [Program Requirements](https://www.athabascau.ca/calendar/2024/undergraduate/program-regulations/degrees/bachelor-of-science-biological-sciences-major-post-diploma.html) **-** Effective September 1, 2024

This program plan will assist you in planning your program. You must follow the official program requirements for the calendar year in which you are enrolled.  
  
Please contact [FST Student Success Centre](http://scis.athabascau.ca/contact-us/index.php) for program planning assistance.

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| **Course Level Legend** JUNIOR / JR - 200 numbered course SENIOR / SR - 300 or 400 numbered course PREPARATORY - 100 numbered course | **Course Progress Legend** TR - Transfer Credit Awarded C - Completed AU Course IP - In Progress AU Course |

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| **LEVEL** | **TOTAL CREDITS** | **COURSE** | **REQUIREMENT** | **COURSE  PROGRESS** | **COMMENTS** |
| Junior | 3 | [ENGL255](http://www.athabascau.ca/syllabi/engl/engl255.php) | Required Core  English Wiring Requirement |  | [Humanities](https://www.athabascau.ca/course/index.html?/undergraduate/humanities/all/) – ENGL255 is strongly recommended, can choose a different ENGL course as long as a minimum grade of B- is achieved |
| Junior | 6 | [MATH215](http://www.athabascau.ca/html/syllabi/math/math215.htm) or [MATH216](http://www.athabascau.ca/html/syllabi/math/math216.htm) | Required Core |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) |
| Junior | 9 | [MATH265](http://www.athabascau.ca/html/syllabi/math/math265.htm) | Required Core |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) |
| Junior | 12 | [COMP200](http://www.athabascau.ca/syllabi/comp/comp200.php) | Required Core |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) |
| Junior | 15 | [BIOL204](https://www.athabascau.ca/syllabi/biol/biol204.html) | Major Core |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) – Lab Component |
| Junior | 18 | [BIOL207](https://www.athabascau.ca/syllabi/biol/biol207.html) | Major Core |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) – Lab Component |
| Junior | 21 | [BIOL230](https://www.athabascau.ca/syllabi/biol/biol230.html) or [BIOL235](https://www.athabascau.ca/syllabi/biol/biol235.html) | Major Core |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) |
| Junior | 27 | [HLST200](https://www.athabascau.ca/syllabi/hlst/hlst200.html) | Major Core |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) |
| Junior | 30 | [COMP206](https://www.athabascau.ca/syllabi/comp/comp206.html) or [COMP218](https://www.athabascau.ca/syllabi/comp/comp218.html) or [COMP268](https://www.athabascau.ca/syllabi/comp/comp268.html) | Minor Core |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) –COMP218 is highly recommended. See Programming Courses Note below for further details. |
| Junior | 33 | [COMP272](https://www.athabascau.ca/syllabi/comp/comp272.html) | Minor Core |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) |
| Senior | 36 | DATA300 | Minor Core |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) |
| Senior | 39 | COMP351 | Minor Core |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) |
| Senior | 42 | [MATH315](https://www.athabascau.ca/syllabi/math/math315.html) | Minor Core |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) |
| Senior | 45 | [COMP456](https://www.athabascau.ca/syllabi/comp/comp456.html) or COMP458 | Minor Elective |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) |
| Jr/Sr | 48 | [COMP](https://www.athabascau.ca/course/index.html?/undergraduate/science/computer-science/) | Minor Elective |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) |
| Jr/Sr | 51 | [COMP](https://www.athabascau.ca/course/index.html?/undergraduate/science/computer-science/) | Minor Elective |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) |
| Senior | 54 | [PHIL333](http://www.athabascau.ca/html/syllabi/phil/phil333.htm) or [PHIL371](http://www.athabascau.ca/html/syllabi/phil/phil371.htm) | Required Core |  | [Humanities](https://www.athabascau.ca/course/index.html?/undergraduate/humanities/all/) |
| Senior | 57 | [SCIE326](http://www.athabascau.ca/html/syllabi/scie/scie326.htm) | Required Core |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) |
| Senior | 60 | [BIOL341](https://www.athabascau.ca/syllabi/biol/biol341.html) | Major Core |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) |
| Senior | 63 | [BIOL401](https://www.athabascau.ca/syllabi/biol/biol401.html) | Major Core |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) |
| Senior | 66 |  | Major Elective |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) – see list below |
| Senior | 69 |  | Major Elective |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) – see list below |
| Senior | 72 |  | Major Elective |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) – see list below |
| Senior | 75 |  | Major Elective |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) / [Applied Studies](https://www.athabascau.ca/course/index.html?/undergraduate/applied-studies/all/) – see list below |
| Senior | 78 |  | Major Elective |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) / [Applied Studies](https://www.athabascau.ca/course/index.html?/undergraduate/applied-studies/all/) – see list below |
| Senior | 81 |  | Major Elective – Lab |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) – Lab Component – see list below |
| Senior | 84 |  | Major Elective – Lab |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) – Lab Component – see list below |
| Senior | 87 | [SCIE480](http://www.athabascau.ca/syllabi/scie/scie480.php) or [COMP494](http://www.athabascau.ca/syllabi/comp/comp494.php) | Required Core |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) |
| Senior | 90 | [ASTR495](https://www.athabascau.ca/syllabi/astr/astr495.html) or [BIOL495](https://www.athabascau.ca/syllabi/biol/biol495.html) or [CHEM495](https://www.athabascau.ca/syllabi/chem/chem495.html) or [ENSC495](https://www.athabascau.ca/syllabi/ensc/ensc495.html) or [GEOG495](https://www.athabascau.ca/syllabi/geog/geog495.html) or [GEOL495](https://www.athabascau.ca/syllabi/geol/geol495.html) or [MATH495](https://www.athabascau.ca/syllabi/math/math495.html) or [NUTR495](https://www.athabascau.ca/syllabi/nutr/nutr495.html) or [PHYS495](https://www.athabascau.ca/syllabi/phys/phys495.html) or [SCIE495](https://www.athabascau.ca/syllabi/scie/scie495.html) | Major Core |  | [Science](https://www.athabascau.ca/course/index.html?/undergraduate/science/all/) – Recommended for this to be your last course or in your last group of courses |
|  | 93 - 120 | Block of 30 Transfer Credits | | | |

**Overall Program Requirements**

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| **Minimums** |
| 30 credits – Residency requirement (courses through AU) |
| 15 credits – Residency requirement in the major (courses through AU) |
| 9 credits – Residency Requirement in the minor (courses through AU) |
| 45 credits – **Senior** (300/400) level |
| 60 credits – In Science |
| 36 credits – **Senior** (300/400) level **Science** |
| 12 credits – **Senior Science credits at the 400 level** |
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| **Maximums** |
| 0 credits – At the preparatory (100) level |
| 75 credits – In **any one Science discipline** |
| 12 credits – Senior project credits (495/496) |
| 30 credits – Prior Learning Assessment and Recognition (PLAR) |

**Biological Sciences Major Electives** – Students must complete a minimum of 21 credits selected from the list of courses below. All 21 credits must be at the senior (300 or higher) level. A minimum of 6 credits must include science lab components.

[BIOL310](https://www.athabascau.ca/syllabi/biol/biol310.html), [BIOL320](https://www.athabascau.ca/syllabi/biol/biol320.html) (lab component), [BIOL325](https://www.athabascau.ca/syllabi/biol/biol325.html) (lab component), [BIOL345](https://www.athabascau.ca/syllabi/biol/biol345.html) (lab component), [BIOL480](https://www.athabascau.ca/syllabi/biol/biol480.html) (lab component), [BIOL495](https://www.athabascau.ca/syllabi/biol/biol495.html), [BIOL496](https://www.athabascau.ca/syllabi/biol/biol496.html), [CHEM301](https://www.athabascau.ca/syllabi/chem/chem301.html), [CHEM350](https://www.athabascau.ca/syllabi/chem/chem350.html) (lab component), [CHEM360](https://www.athabascau.ca/syllabi/chem/chem360.html) (lab component), [CHEM495](https://www.athabascau.ca/syllabi/chem/chem495.html), [CHEM496](https://www.athabascau.ca/syllabi/chem/chem496.html), [HADM336](https://www.athabascau.ca/syllabi/hadm/hadm336.html), [HADM379](https://www.athabascau.ca/syllabi/hadm/hadm379.html), [HLST301](https://www.athabascau.ca/syllabi/hlst/hlst301.html), [NUTR330](https://www.athabascau.ca/syllabi/nutr/nutr330.html) or [NUTR331](https://www.athabascau.ca/syllabi/nutr/nutr331.html), [NUTR405](https://www.athabascau.ca/syllabi/nutr/nutr405.html), [NUTR406](https://www.athabascau.ca/syllabi/nutr/nutr406.html), [NUTR495](https://www.athabascau.ca/syllabi/nutr/nutr495.html), [NUTR496](https://www.athabascau.ca/syllabi/nutr/nutr496.html), [PSYC302](https://www.athabascau.ca/syllabi/psyc/psyc302.html), [PSYC355](https://www.athabascau.ca/syllabi/psyc/psyc355.html)

**Recommended Options** - As the following courses are pre-requisites to some electives, they are recommended options for students in the Biological Sciences major:

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| [CHEM217](https://www.athabascau.ca/syllabi/chem/chem217.html) (lab component), [CHEM218](https://www.athabascau.ca/syllabi/chem/chem218.html) (lab component) |

**Programming Courses Note:**

**COMP 268** - Introduction to Computer Programming (Java):

Java is a reliable and multi-platform programming language, widely used in computing and information systems including web, mobile, and cloud applications and enterprise-level development. It has been a core programming language in many universities. You may choose this course if you don’t have a preference for other programming languages.

**COMP 206** - Introduction to Computer Programming (C++):

C++ is often a desired language in computer systems and game programming, or anything that is considered "computationally intensive". It can provide low-level control and high-performance code for software-hardware interfaces, operating systems, computer graphics, and high-performance computing. Students who are interested in game programming, computer graphics, embedded systems, and computer system level programming may choose this course.

**COMP 218** - Introduction to Computer Programming with Python:

Python is relatively easy to learn and use. It has extensive library support and is commonly adopted in many computing and its application areas including machine learning. Python is recommended for students who would take AI and machine learning, data analysis, and other related computing courses and minors.