

# BIOCHEMISTRY AND MOLECULAR BIOLOGY: PRE-MEDICAL OR PRE-VETERINARY SCIENCE, BSAG

**Requirements for Students Matriculating in or before Academic Year 2024-2025.** Learn more about University Academic Regulation 3.1 (<http://catalog.okstate.edu/university-academic-regulations/#matriculation>).

**Minimum Overall Grade Point Average: 2.00**

**Total Hours: 120**

| Code  | Title  | Hours     |
|---|--|-----------|
| <b>General Education Requirements</b>   |  |           |
| <i>English Composition</i>  |  |           |
| See Academic Regulation 3.5 ( <a href="http://catalog.okstate.edu/university-academic-regulations/#english-composition/">http://catalog.okstate.edu/university-academic-regulations/#english-composition/</a> ) |  |           |
| ENGL 1113   | Composition I  | 3         |
| or ENGL 1313  | Critical Analysis and Writing I                                  |           |
| Select one of the following:  |  | 3         |
| ENGL 1213   | Composition II   |           |
| ENGL 1413   | Critical Analysis and Writing II                                 |           |
| ENGL 3323   | Technical Writing  |           |
| <i>American History &amp; Government</i>  |  |           |
| Select one of the following:  |  | 3         |
| HIST 1103   | Survey of American History                                       |           |
| HIST 1483   | American History to 1865 (H)                                     |           |
| HIST 1493   | American History Since 1865 (DH)                                 |           |
| POLS 1113   | American Government  | 3         |
| <i>Analytical &amp; Quantitative Thought (A)</i>  |  |           |
| MATH 2144   | Calculus I (A) <sup>1</sup>                                      | 4         |
| <i>Humanities (H)</i>   |  |           |
| Courses designated (H)  |  | 6         |
| <i>Natural Sciences (N)</i>   |  |           |
| Must include one Laboratory Science (L) course  |  |           |
| CHEM 1314   | Chemistry I (LN) <sup>1</sup>                                    | 4         |
| 5 hours courses designated N  |  | 5         |
| <i>Social &amp; Behavioral Sciences (S)</i>   |  |           |
| AGEC 1113   | Introduction to Agricultural Economics (S) <sup>1</sup>          | 3         |
| <i>Additional General Education</i>   |  |           |
| Courses designated (A), (H), (N), or (S)  |  | 6         |
| <b>Hours Subtotal</b>   |  | <b>40</b> |
| <b>Diversity (D) &amp; International Dimension (I)</b>  |  |           |
| May be completed in any part of the degree plan   |  |           |
| Select at least one Diversity (D) course  |  |           |
| Select at least one International Dimension (I) course  |  |           |
| <b>College/Departmental Requirements</b>  |  |           |
| <i>Agricultural Sciences and Natural Resources Core</i>   |  |           |
| UNIV 1111   | First Year Seminar (or other approved first year seminar course) | 1         |

From two of the following groups, select one course: 6

|  |   |           |
|--|---|-----------|
| Group 1:                               |   |           |
| PLNT 1213                              | Introduction to Plant and Soil Systems  |           |
| HORT 1013                              | Principles of Horticultural Science (LN)  |           |
| NREM 1113                              | Elements of Forestry  |           |
| Group 2:                               |   |           |
| SOIL 1113                              | Land, Life and the Environment (N)  |           |
| SOIL 2124                              | Fundamentals of Soil Science (N)  |           |
| Group 3:                               |   |           |
| ANSI 1023 & ANSI 1021                  | Introduction to the Animal Sciences and Introduction to the Animal Sciences Lab   |           |
| FDSC 1133                              | Fundamentals of Food Science  |           |
| ENTO 2993                              | Introduction to Entomology (LN)   |           |
| ENTO 3003                              | Livestock Entomology  |           |
| Group 4:                               |   |           |
| NREM 1014                              | Introduction to Natural History (LN)  |           |
| NREM 3013                              | Applied Ecology and Conservation  |           |
| ENVR 1113                              | Elements of Environmental Science (N)   |           |
| BIOC 2344                              | Chemistry and Applications of Biomolecules  |           |
| BIOC 3713                              | Biochemistry I  |           |
| LA 1013                                | Introduction to Landscape Architecture  |           |
| <i>Written and Oral Communications</i> |   |           |
| Select one of the following:           |   | 3         |
| AGCM 3103                              | Written Communications in Agricultural Sciences and Natural Resources             |           |
| BCOM 3113                              | Written Communication   |           |
| BCOM 3443                              | Business Communication for International Students                                 |           |
| ENGL 3323                              | Technical Writing <sup>2</sup>  |           |
| Select one of the following:           |   | 3         |
| AGCM 3203                              | Oral Communications in Agricultural Sciences & Natural Resources (S) <sup>3</sup> |           |
| SPCH 2713                              | Introduction to Speech Communication (S) <sup>3</sup>                             |           |
| SPCH 3733                              | Elements of Persuasion (S) <sup>3</sup>   |           |
| <b>Hours Subtotal</b>                  |   | <b>13</b> |
| <b>Major Requirements</b>              |   |           |
| <i>Core Courses</i>                    |   |           |
| BIOC 3723                              | Biochemistry and Molecular Biology Laboratory                                     | 3         |
| BIOC 3813                              | Biochemistry II   | 3         |
| BIOL 1113 & BIOL 1111                  | Introductory Biology (N) and Introductory Biology Laboratory (LN)                 | 4         |
| or BIOL 1114                           | Introductory Biology (LN)   |           |
| BIOL 1604                              | Animal Biology  | 4         |
| or PBIO 1404                           | Plant Biology (LN)  |           |
| CHEM 1515                              | Chemistry II (LN)   | 5         |
| CHEM 3053                              | Organic Chemistry I   | 3         |
| CHEM 3112                              | Organic Chemistry Laboratory  | 2         |
| CHEM 3153                              | Organic Chemistry II  | 3         |
| Select one of the following:           |   | 3         |

|  |   |            |
|--|---|------------|
| MATH 2153  | Calculus II (A)                         |            |
| STAT 2013  | Elementary Statistics (A)               |            |
| STAT 4013  | Statistical Methods I (A)               |            |
| MICR 2123  | Introduction to Microbiology            | 3          |
| MICR 2132  | Introduction to Microbiology Laboratory | 2          |
| PHYS 1114  | College Physics I (LN)                  | 4          |
| or PHYS 2014   | University Physics I (LN)               |            |
| PHYS 1214  | College Physics II (LN)                 | 4          |
| or PHYS 2114   | University Physics II (LN)              |            |
| <i>Related Courses</i>   |   |            |
| Option:  |   |            |
| Select an option (p. 2)  |   | 20         |
| <b>Hours Subtotal</b>  |   | <b>63</b>  |
| <b>Electives</b>   |   |            |
| Select 4 hours or hours to complete required total for degree. |   | 4          |
| <b>Hours Subtotal</b>  |   | <b>4</b>   |
| <b>Total Hours</b>   |   | <b>120</b> |

1

College & Departmental requirements that may be used to meet General Education requirements.

2

If ENGL 3323 Technical Writing is substituted for ENGL 1213 Composition II above; hours in this block are reduced by 3.

3

If used as (S) course above, hours in this block reduced by 3.

## Options

### Option 1

With the approval of the advisor, department head, and dean, hours of basic sciences from an accredited chiropractic, dental medial, optometry, osteopathic, pharmacy, podiatry, or veterinary medical school to total 57 hours.

### Option 2

| Code  | Title                                    | Hours |
|---|--|-------|
| Select one of the following:  |  | 3     |
| BIOL 3023   | General Genetics                         |       |
| ANSI 3423   | Animal Genetics                          |       |
| PLNT 3554   | Plant Genetics and Biotechnology         |       |
| Select one of the following:  |  | 4     |
| BIOL 3204   | Physiology                               |       |
| ENTO 3044   | Insect Morphology and Physiology         |       |
| PBIO 4463   | Plant Physiology                         |       |
| Select a minimum of 13 hours of BIOC or courses related to BIOC, subject to Advisor approval, of the following: |  | 13    |
| ANSI 3543   | Principles of Animal Nutrition           |       |
| BIOC 2202   | Medicine and Molecules                   |       |
| BIOC 2352   | Fundamental Biochemistry                 |       |
| BIOC 3003   | Hypothesis-Driven Undergraduate Research |       |
| BIOC 3153   | Synthetic Biology                        |       |
| BIOC 3223   | Physical Chemistry for Biologists        |       |

|                    |   |           |
|--------------------|---|-----------|
| or CHEM 3433       | Physical Chemistry I                            |           |
| BIOC 3523          | Biochemistry of Disease at the Cellular Level   |           |
| BIOC 4013          | Biotechnology Development and Implementation    |           |
| BIOC 4023          | Molecular Biology and Stress Response of Plants |           |
| BIOC 4113          | Molecular Biology                               |           |
| BIOC 4213          | Disease and Metabolism                          |           |
| BIOC 4723          | Introduction to Bioinformatics                  |           |
| BIOC 4883          | Senior Seminar in Biochemistry                  |           |
| BIOC 4990          | Undergraduate Research                          |           |
| <b>Total Hours</b> |   | <b>20</b> |

## Other Requirements

- A minimum of 40 semester credit hours and 100 grade points must be earned in courses numbered 3000 or above.
- A 2.00 GPA or higher in upper-division hours.

## Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2030.