Students pursuing a degree at OSU must meet the following requirements in addition to program and college requirements.

- 180-total number of credits required to graduate from OSU
- 60-number of upper division credits required (300-400 level courses)
- Maintain a 2.0 or better university GPA
- Max 18 course withdraws (W grade)
- Max 11 credits PAC


## BACCALAUREATE CORE Requirements-

- Search Bacc Core classes in the Schedule of Classes.
- Transfer students who have an AAOT have all Skills and Perspectives completed.
- Students with AAOT still need to complete Synthesis for Bacc Core.

| Skills | HHS 231 (2cr) | Grade |  |  |
| :--- | :--- | :--- | :---: | :---: |
| Lifetime Fitness (2cr) | Physical Activity Course (PAC) |  |  |  |
| Lifetime Fitness PAC (1cr) | Fulfilled by major; must complete in 1st 45 OSU credits |  |  |  |
| Mathematics (3-4cr) | WR 121z |  |  |  |
| Writing I (4cr) |  |  |  |  |
| Writing II (3-4cr) |  |  |  |  |
| Speech (3-4cr) |  |  |  |  |
| Perspectives: No more than two courses from the same department may be used to satisfy the Perspectives <br> Categories. |  |  |  |  |
| Cultural Diversity (3-4cr) | PSY for pre-health professions - pre-med option <br> includes |  |  |  |
| Literature \& Arts (3-4cr) | Pre-med option includes Western Culture |  |  |  |
| Soc. Processes \& Institutions | Fulfilled by Major (CH 2XX sequence) |  |  |  |
| Western Culture (3-4cr) | Fulfilled by Major (BI 2XX sequence) |  |  |  |
| Physical Science (4cr) | Fulfilled by Major (CH 2XX \& BI 2XX sequence) |  |  |  |
| Biological Science (4cr) |  |  |  |  |
| Additional Phys or Bio Science (4cr) |  |  |  |  |
| Difference, Power, \& Discrimination (3-4cr) |  |  |  |  |
| Synthesis: Must be upper division and no more than two courses from the same department may be used. |  |  |  |  |
| Contemporary Global Issues (3-4cr) |  |  |  |  |
| Science, Tech \& Society (3-4cr) | Pre-med option includes STS |  |  |  |

## Biochemistry and Molecular Biology Major Requirements

Students are required to achieve a C- or better in the following courses required for the Biochemistry and Molecular Biology major:

| Core Sequences | Pre(Co)Requisites | Notes | Grade |
| :---: | :---: | :---: | :---: |
| CH 231 \& 261 General Chem. \& Lab (4+1) | MTH Placement |  |  |
| CH 232 \& 262 General Chem. \& Lab (4+1) | CH 231/261 (C-) |  |  |
| CH 233 \& 263 General Chem. \& Lab (4+1) | CH 232/262 (C-) |  |  |
| BI 221 Principles of Biology: Cells (4) | CH 231/261 (C-) or co-req |  |  |
| BI 222 Principles of Biology: Organisms (4) | BI 221 (C-) |  |  |
| BI 223 Principles of Biology: Populations (4) | BI 221 (C-) |  |  |
| MTH 251 - Calculus I(4) | MTH 112 LC ( ${ }^{\text {( }}$ |  |  |
| MTH 252 - Calculus II(4) | MTH 251 (C-) |  |  |
| ST 351 Introduction to Statistical Methods (4) |  | MTH 111z rec. |  |
| CH 334 Organic Chemistry (3) | CH 233/263 (C-) |  |  |
| CH 335 Organic Chemistry (3) | CH 334 (C-) |  |  |
| CH 336 Organic Chemistry (3) | CH 335 (C-) |  |  |
| CH 337 Organic Chemistry Lab (4) | CH 332 or CH 334 | Pre-health prof. req. |  |
| or CH 324 Quantitative Analysis (4) | CH 233/263 (C-) |  |  |
| PH 201 General Physics (5) | MTH 112z or higher | MTH 251 rec. |  |
| PH 202 General Physics (5) | MTH 112z or higher |  |  |
| PH 203 General Physics (5) | MTH 112z or higher |  |  |
| BMB Core Coursework | Pre(Co)Requisites | Notes |  |
| BI 198 approved sub for BB 111 (1) |  |  |  |
| BB 314 Cell and Molecular Biology (4) | $\begin{gathered} \text { BI 221, 222, } 223 \text { (C-); CH } \\ 233 \end{gathered}$ |  |  |
| BB 315 Molecular Biology Lab (3) | Co-req BB 314 (C-) |  |  |
| BI 319 (3) approved sub for BB 317 (3) | BI 221, 222, 223 (C-) | Offered in spring. WIC. |  |
| BB 490 Biochemistry 1: Structure/Function (3) | BI 2XX (C-); CH 336 (C-) | Offered Fall 24 |  |
| BB 491 Biochemistry 2: Metabolism (3) | BB 490 (D-) | Offered Winter 25 |  |
| BB 492 Biochemistry 3: Genetic Biochemistry (3) | BB 490, BB 491 (D-) | Offered Spring 25 |  |
| BB 494 Biochemistry Lab Molecular Tech. (3) | BB 493 (D-) or BB 315 (D-) | Offered Fall 25 |  |
| BB 481 Macromolecular Structure (3) | BB 490 (D-) | Offered 2025-2026 |  |
| BB 486 Advanced Molecular Genetics (3) | $\begin{gathered} \hline \text { BB } 492 \text { (C-) or BB 451; } \\ \text { BB } 314 \text { (C-) } \end{gathered}$ | Offered 2025-2026 |  |
| Required Option: Complete one of the three options below (21-22 credits) |  |  |  |
| Advanced Molecular Biology (21 credits) | Pre(Co)Requisites | Notes |  |
| BB 345 Python for Molecular Biologist (3) |  |  |  |
| Electives for Option (select at least 18cr) |  |  |  |
| BB 401 Undergraduate Research | Required Dept. Approval |  |  |
| BB 485 Applied Bioinformatics (3) | BI 221 (C-); BB 345 (C-) | Offered Spring 24 |  |
| BI 311 Genetics (4) | BI 221, 222, 223 (C-) |  |  |
| BI 445 Evolution (3) | BI 311 |  |  |
| MB 302 Gen. Microbiology \& 303 Lab (3+2) | CH 332; BI 221 and 222 (C) |  |  |
| ST 352 Intro to Statistical Methods (4) | ST 351 |  |  |
| Computational Molecular Biology (21 credits) | Pre(Co)Requisites | Notes |  |


| BB 485 Applied Bioinformatics (3) | BI 221 (C-); BB 345 (C-) |  |  |
| :---: | :---: | :---: | :---: |
| BB 345 Python for Molecular Biologists (3) | You can take CS 161 through Ecampus instead of BB 345 |  |  |
| Electives for Option (select 14-15cr for 21 total) |  |  |  |
| BB 401 Undergraduate Research | Required Dept. Approval |  |  |
| BI 311 Genetics (4) | BI 221, 222, 223 (C-) |  |  |
| CS 162 Intro. to Computer Sci II (4) | ENGR 103 (has ENGR 102 prereq...needs override) | ENGR 103 offered spring; CS 162 offered fall |  |
| MTH 231 Elements of Discrete Math (4) | MTH $111 z$ (C-) or ALEKs 60 |  |  |
| ST 352 Intro to Statistical Methods (4) | ST 351 |  |  |
| Pre-Medicine/Biochemistry and Molecular Biology (22 credits) |  |  |  |
| BI 197 approved (sub BI 109) Health Prof: Medical (1) |  |  |  |
| PSY 201 or PSY 202 General Psychology (4) |  | BACC Social Processes |  |
| PHL 205 Ethics (4) | Offered 2025-2026 | BACC Western Culture |  |
| SOC 204 Introduction to Sociology (4) |  | BACC Social Processes |  |
| Science Electives for Option (select 10cr or more) |  |  |  |
| BB 332 Molecular Medicine (3) | Recommended: any bio class | BACC STS |  |
| BB 401 Undergraduate Research | Required Dept. Approval |  |  |
| BI 311 Genetics (4) | BI 221, 222, 223 (C-) |  |  |
| MB 302 Gen. Microbiology \& 303 Lab (3+2) | CH 332; BI 221 and 222 (C) |  |  |
|  |  |  |  |

*Disclaimer: Information is for OSU-Cascades only and is subject to change with curriculum changes. Catalog year refers to the year students are admitted to OSU and declare the BMB Major.

BMB Program Information:

- Demonstrate a core knowledge base in the theory and practice of modern Biochemistry and Molecular Biology (BMB).
- Demonstrate experimental design and laboratory skills relevant to biochemistry and molecular biology, including preparation, experimental design, evaluation of data, and safe laboratory practices.
- Critically evaluate data and design experiments to test hypotheses relevant to the practice of Biochemistry and Molecular Biology.
- Read and evaluate primary literature in the discipline.
- Effectively communicate scientific data and ideas, using various formats appropriate for different target audiences.
- Use databases, computational tools and other online resources effectively.
- Demonstrate awareness of ethical issues in the practice of science.

Students majoring in Biochemistry and Molecular Biology cannot seek a double major or minor in Biology
Pre-Medicine/Biochemistry and Molecular Biology Option

Biochemistry and Molecular Biology students interested in a career in medicine should choose this option. It may also be suitable for students interested in some other health professions and these students should first consult with their advisor. In addition to offering a rigorous foundation in biochemistry, molecular and cellular biology, chemistry, and genetics, the Pre-medicine option meets the requirements for most medical schools in the U.S. by providing students with training in psychology, ethics and social sciences. Students have a wide choice of medically relevant electives in areas such as physiology, microbiology, and immunology. Students are strongly encouraged to participate in undergraduate research. Faculty pre-med advisors guide students to integrate undergraduate research and other relevant professional opportunities into their undergraduate experience and to prepare themselves as strong candidates for admission to the professional schools of their interest.

Computational Molecular Biology Option
The Computational Molecular Biology option is designed for students interested in the interface of molecular biology, computer science, and statistics. It provides strong preparation for graduate school in computational biology as well as the biotechnology and pharmaceutical industry workforce. This option couples the comprehensive core training in biochemistry and molecular biology with advanced course work in mathematics, statistics, computer science, and bioinformatics. Students are strongly encouraged to participate in undergraduate research, and up to six research credits can be applied to the Upper-division Science Elective requirements. Faculty advisors work with students to identify elective courses, undergraduate research opportunities, and professional internships that support their individual interests.

Advanced Molecular Biology Option
The Advanced Molecular Biology option is designed for students interested in pursuing graduate work in molecular life sciences or entering the workforce in the biotechnology and pharmaceutical industries. It provides advanced training in genomics, epigenetics and other areas of current research in molecular biology, in addition to the core courses in the major. Students are strongly encouraged to participate in undergraduate research, and up to six research credits can be applied to the Upper-division Science Elective requirements. Faculty advisors work with students to help them identify electives, research opportunities, and professional internships that align with their interests.

Catalog Information found at: catalog.oregonstate.edu/college-departments/science/school-life-sciences/biochemistry-biophysics/biochemistry-molecular-biology-bs-hbs/\#sampleplantext

