

# Articulation Agreement by Major

Effective during the 2022-2023 Academic Year

To: University of California, Merced  
2022-2023 General Catalog, Semester

From: De Anza College  
2022-2023 General Catalog, Quarter

## Biological Sciences, Microbiology and Immunology Emphasis, B.S.

### ADMISSIONS MAJOR SELECTION CRITERIA

**Effective Fall 2023**, the introductory BIO course series for majors is changing and BIO 001/001L and BIO 002/002L are being discontinued. The course series is changing such that:

- BIO 011 (Introduction to Molecular Biology) & BIO 011L (Introduction to Molecular Biology Lab) are equivalent to BIO 002 (Introduction to Molecular Biology) & BIO 002L (Introduction to Molecular Biology Lab), respectively
- BIO 012 (Introduction to Organismal Biology) & BIO 012L (Introduction to Organismal Biology Lab) are equivalent to BIO 001 (Contemporary Biology) & BIO 001L (Contemporary Biology Lab), respectively

**Starting in Fall 2025**, Transfer applicants to the Biology major will require completion of BIO 011 and BIO 011L for selection to the major. BIO 012 and BIO 012L will no longer be required for selection, but recommended to be completed prior to Transfer. Transfer students will also be required to complete BIO 011 and BIO 011L for Transfer Admissions Guarantees (TAGs) starting in the Fall of 2025.

For admission to the **Biological Sciences, Microbiology and Immunology emphasis, B.S.** major, students must earn an overall transferable GPA of 2.8 or better, and must complete classes articulated with the following UC Merced courses by the end of spring term prior to fall enrollment or by the end of fall term prior to spring enrollment. All Major Preparation courses requires a "C" or better.

**REQUIRED** Major Preparation Courses For Transfer:

BIO 001 AND BIO 001L  
CHEM 002  
CHEM 008 AND CHEM 008L  
CHEM 010  
MATH 011 OR MATH 021  
MATH 012 OR MATH 022

**Additional Major Preparation Courses:** Recommended Prior to Transfer:

\* BIO 002 AND BIO 002L  
PHYS 018 & PHYS 018L AND PHYS 019 & PHYS 019L OR PHYS 008 & PHYS 008L AND PHYS 009 & PHYS 009L  
Complete one course in Computer Science from: BIOE 21 or CSE 019 or MATH 015 or ME 021  
Complete one course in Probability and Statistics from: BIO 018 or ECON 010 or MATH 032 or PSY 010

\* BIO 002 is a prerequisite for upper division Biology courses and completing in advance of transfer can help speed up time to graduation.

#### **Organic Chemistry Prerequisite Advisory**

- For Microbiology and Immunology emphasis, BIO 101: Biochemistry I is an upper division course completed at UC Merced during the Junior Year. BIO 101 has a prerequisite of CHEM 100 (which is usually the 2nd semester of Organic Chemistry at your Community College). Please find the articulation at the bottom of this agreement.

#### **AP Exam Score & Course Exemptions**

- AP Biology score of 4 or 5 exempts BIO 001 and BIO 001L
- AP Chemistry score of 5 exempts CHEM 002 and CHEM 010
- AP Mathematics: Calculus AB score of 4 or 5 exempts MATH 011 OR MATH 021
- AP Mathematics: Calculus BC score of 3 exempts MATH 11 OR MATH 021
- AP Mathematics: Calculus BC score of 4 or 5 exempts MATH 011 and MATH 012 OR MATH 021 and MATH 022
- AP Mathematics: Calculus BC Subscore AB score 3 or higher exempts MATH 011 or MATH 021
- AP Physics: Physics C: Mechanics score of 5 exempts PHYS 008 and PHYS 008L or PHYS 018 and PHYS 018L
- AP Statistics score of 4 exempts PSY 010
- AP Statistics score of 5 exempts ECON 010

**UC Merced Advance Placement (AP) and International Baccalaureate (IB)** credit policies are detailed in the link below:

[Advance Placement \(AP\) and International Baccalaureate \(IB\) Examinations](#)

### IMPORTANT TRANSFER INFORMATION

In addition to the Major Selection Criteria, all Upper-Division Transfer applicants must meet minimum [University of California admissions requirements](#). Visit <https://admissions.ucmerced.edu/transfer/requirements> for more specific UC Merced admissions information.

Prior to Transferring to UC Merced, please be advised of the following for Junior Transfers:

**1) WRI 001 and WRI 010 are admissions requirements:** In most situations, WRI 001 is fulfilled by IGETC 1A English Composition and WRI 010 is fulfilled by IGETC 1B Critical Thinking/English Composition. However best practice is to complete the articulated course for WRI 001 and WRI 010.

Please scroll towards the bottom of the agreement to find the articulation for each course.

**2) Transfer Admissions Guarantee (TAG):** UC Merced is one of the six UC's that offers Transfer Admissions Guarantee. Please visit the TAG website for more information: <https://admissions.ucmerced.edu/transfer/tag>

**3) General Education (GE Requirements):** While general education is not required for admission, it can help speed up your time to graduation once you transfer to UC Merced. We highly recommend reviewing the [Transfer Students: Satisfying General Education](#) page in the catalog for a more extensive explanation of the requirements.

Please note the [School of Natural Sciences](#) does not recommend IGETC, but accepts it; students are encouraged to focus primarily on lower division major preparation and fulfilling UCM minimum admissions requirements. If you elect to complete IGETC, the courses may double count with the major courses listed below. Please visit your Community College Counselor to learn more.

**4. This agreement displays all lower-division (or Major Preparation) courses required in the major.** UC Merced courses on the left, approved (articulated) transfer courses to the right.

**5. Changes to this Agreements:** Major requirements are subject to change from one academic year to the next. Newly-articulated courses are added on a rolling basis, and articulated courses can be revised. Visit ASSIST every semester for the latest information and consult with an Academic Counselor at your institution on a regular basis.

For more questions about admissions, please email: [transfer@ucmerced.edu](mailto:transfer@ucmerced.edu).

## ABOUT THIS MAJOR

The University of California, Merced undergraduate major in the [Biological Sciences](#) instructs students in the study of biology across all of its scales from molecules and cells to organisms and ecosystems. The program teaches biology as a unified and interdisciplinary science, reflecting the foundational importance of chemistry, physics, mathematics, engineering, computer science, and philosophy to our understanding of biological systems. Students learn both the theoretical and empirical bases of knowledge, and how the scientific method is applied to investigate fundamental questions in the field.

For more information on the **Microbiology and Immunology** emphasis, please visit the [22-23 catalog](#) and the [Four-Year Course Plan](#) (We encourage to visit your Community College Counselor to create an individualized educational plan for transfer)

## ALGEBRA AND TRIGONOMETRY PHYSICS NOTE

1. A Year Long Algebra or Trigonometry based Physics are acceptable substitutes for PHYS 018 & 018L AND PHYS 019 & 019L for this major only.
2. California Community College, courses with C-IDs PHYS 105 and PHYS 110 will be accepted towards the year-long Algebra or Trigonometry based Physics series for this major agreement only. Please refer to <https://www.c-id.net/courses> to find the course for your community college. As recommended, best practice is to discuss this option with your Community College Counselor.
3. Students electing to meet the requirement with algebra or trigonometry-based physics may be unable to take advanced, Upper Division courses in human physiology, biophysics and other courses requiring calculus-based physics. Upon enrollment, students should consult with their academic advisor on alternate course options.
4. Students will need to complete the full-year sequence of general physics or calculus-based physics in order to have the requirement satisfied. Students will not be able to mix and match non-calc with calc based physics due to the impact it will have with meeting prerequisite requirements.
5. If you decide on this option, upon transferring to UC Merced, please let your Academic Advisor know so they can help you with a course exemption override.

## MAJOR PREPARATION COURSES REQUIRED FOR TRANSFER

Minimum grade required: C or better  
Required for admission

**BIO 001** - Contemporary Biology (4.00)

--- And ---

**BIO 001L** - Contemporary Biology Lab (1.00)



**BIOL 6AH** - Form and Function in the Biological World - HONORS (6.00)

--- And ---

**BIOL 6CH** - Ecology and Evolution - HONORS (6.00)

--- Or ---

**BIOL 6A** - Form and Function in the Biological World (6.00)

--- And ---

**BIOL 6C** - Ecology and Evolution (6.00)

--- Or ---

**BIOL 6AH** - Form and Function in the Biological World - HONORS (6.00)

--- And ---

**BIOL 6C** - Ecology and Evolution (6.00)

--- Or ---

**BIOL 6A** - Form and Function in the Biological World (6.00)

--- And ---

**BIOL 6CH** - Ecology and Evolution - HONORS (6.00)

--- And ---

**CHEM 002** - General Chemistry I (4.00)



**CHEM 1A** - General Chemistry (5.00)

--- And ---

**CHEM 1B** - General Chemistry (5.00)

--- Or ---

**CHEM 1A** - General Chemistry (5.00)

--- And ---

**CHEM 1BH** - General Chemistry - HONORS (5.00)

--- Or ---

**CHEM 1AH** - General Chemistry - HONORS (5.00)

--- And ---

**CHEM 1BH** - General Chemistry - HONORS (5.00)

--- Or ---

**CHEM 1AH** - General Chemistry - HONORS (5.00)

--- And ---

**CHEM 1B** - General Chemistry (5.00)

**CHEM 010** - General Chemistry II (4.00)



**CHEM 1B** - General Chemistry (5.00)

--- And ---

**CHEM 1C** - General Chemistry and Qualitative Analysis (5.00)

--- Or ---

**CHEM 1BH** - General Chemistry - HONORS (5.00)

--- And ---

**CHEM 1CH** - General Chemistry and Qualitative Analysis - HONORS (5.00)

**CHEM 008** - Principles of Organic Chemistry (3.00)

--- And ---

**CHEM 008L** - Principles of Organic Chemistry Lab (1.00)



**CHEM 12A** - Organic Chemistry (5.00)

--- And ---

**CHEM 12B** - Organic Chemistry (5.00)

--- And ---

**MATH 011** - Calculus I (4.00)

← No Course Articulated

--- And ---

**MATH 012** - Calculus II (4.00)

← No Course Articulated

--- Or ---

**MATH 021** - Calculus I for Physical Sciences & Engineering (4.00)

←

**MATH 1A** - Calculus (5.00)

--- And ---

**MATH 1B** - Calculus (5.00)

--- Or ---

**MATH 1AH** - Calculus - HONORS (5.00)

--- And ---

**MATH 1BH** - Calculus - HONORS (5.00)

--- And ---

**MATH 022** - Calculus II for Physical Sciences & Engineering (4.00)

←

**MATH 1B** - Calculus (5.00)

--- And ---

**MATH 1C** - Calculus (5.00)

--- Or ---

**MATH 1BH** - Calculus - HONORS (5.00)

--- And ---

**MATH 1CH** - Calculus - HONORS (5.00)

## ADDITIONAL MAJOR PREPARATION COURSES

Minimum grade required: C or better  
Recommended to be completed prior to transfer

**BIO 002** - Introduction to Molecular Biology (4.00)

--- And ---

**BIO 002L** - Introduction to Molecular Biology Lab (1.00)

←

**BIOL 6B** - Cell and Molecular Biology (6.00)

--- And ---

**\*\*REFER TO TOP OF AGREEMENT\*\***

**PHYS 018** - Introductory Physics I for Biological Sciences (3.00)

--- And ---

**PHYS 018L** - Introductory Physics I for Biological Sciences Lab (1.00)

←

**PHYS 2A** - General Introductory Physics (5.00)

--- And ---

**PHYS 2C** - General Introductory Physics (5.00)

**\*\*REFER TO TOP OF AGREEMENT\*\***

**PHYS 019** - Introductory Physics II for Biological Sciences (3.00)

--- And ---

**PHYS 019L** - Introductory Physics II for Biological Sciences (1.00)

←

**PHYS 2B** - General Introductory Physics (5.00)

--- And ---

**PHYS 2C** - General Introductory Physics (5.00)

--- Or ---

**PHYS 008** - Introductory Physics I for Physical Sciences (3.00)

--- And ---

**PHYS 008L** - Introductory Physics I for Physical Sciences Lab (1.00)

←

**PHYS 4A** - Physics for Scientists and Engineers: Mechanics (6.00)

**PHYS 009** - Introductory Physics II for Physical Sciences (3.00)  
 --- And ---  
**PHYS 009L** - Introductory Physics II for Physical Sciences Lab (1.00)



**PHYS 4B** - Physics for Scientists and Engineers: Electricity and Magnetism (6.00)

--- And ---

**PHYS 4C** - Physics for Scientists and Engineers: Fluids, Waves, Optics and Thermodynamics (6.00)

## COMPUTER SCIENCE COURSE

Select 1 Course from the following

Minimum grade required: C or better

**BIOE 021** - Introduction to Computing with Python (4.00)



No Course Articulated

**CSE 019** - Introduction to Computing (4.00)



**CIS 26A** - C as a Second Programming Language (4.50)

--- Or ---

**CIS 26B** - Advanced C Programming (4.50)

- Effective next fall, this course will no longer articulate

--- Or ---

**CIS 22A** - Beginning Programming Methodologies in C++ (4.50)

--- And ---

**CIS 22B** - Intermediate Programming Methodologies in C++ (4.50)

--- Or ---

**CIS 22A** - Beginning Programming Methodologies in C++ (4.50)

--- And ---

**CIS 22BH** - Intermediate Programming Methodologies in C++ - HONORS (4.50)

--- Or ---

**CIS 27** - Programming in C++ for C/Java Programmers (4.50)

--- Or ---

**CIS 36A** - Introduction to Computer Programming Using Java (4.50)

--- And ---

**CIS 36B** - Intermediate Problem Solving in Java (4.50)

--- Or ---

**CIS 41A** - Python Programming (4.50)

**MATH 015** - Introduction to Scientific Data Analysis (2.00)



No Course Articulated

**ME 021** - Engineering Computing (4.00)



No Course Articulated

## PROBABILITY AND STATISTICS COURSE

Select 1 Course from the following

Minimum grade required: C or better

**BIO 018** - Data Science for Life Sciences (4.00)



No Course Articulated

**ECON 010** - Statistical Inference (4.00)



**MATH 10** - Introductory Statistics (5.00)

**MATH 032** - Probability and Statistics (4.00)



**MATH 23** - Engineering Statistics (5.00)

**PSY 010** - Analysis of Psychological Data (5.00)



**PSYC 15** - Statistics and Research Methods in Social Science (4.00)  
 Same-As: SOC 15

--- Or ---

**MATH 10** - Introductory Statistics (5.00)

## ORGANIC CHEMISTRY ADVISORY

Prerequisite(s) for upper division course(s) in this major, concentration or track

\*\*REFER TO TOP OF AGREEMENT\*\*

**CHEM 100** - Organic Synthesis and Mechanism (4.00)



No Course Articulated

--- Or ---

**CHEM 100** - Organic Synthesis and Mechanism (4.00)

--- And ---

**CHEM 100L** - Organic Chemistry Laboratory (1.00)



**CHEM 12B** - Organic Chemistry (5.00)

- Lower division credit only

--- And ---

**CHEM 12C** - Organic Chemistry (5.00)

- Lower division credit only

## ACADEMIC WRITING - CHOOSE ONE COURSE FROM:

**\*\*REFER TO TOP OF AGREEMENT\*\***

Minimum grade required: C or better

**WRI 001** - Academic Writing (4.00)



**ESL 5** - Advanced Composition and Reading (5.00)

--- Or ---

**EWRT 1A** - Composition and Reading (5.00)

--- Or ---

**EWRT 1AH** - Composition and Reading - HONORS (5.00)

--- Or ---

**EWRT 1AS** - Intensive Composition and Reading Stretch: First Quarter (5.00)

- UC credit limitation applies; refer to UC-transferability list

--- And ---

**EWRT 1AT** - Intensive Composition and Reading Stretch: Second Quarter (5.00)

- UC credit limitation applies; refer to UC-transferability list

## COLLEGE READING AND COMPOSITION - CHOOSE ONE COURSE FROM:

**\*\*REFER TO TOP OF AGREEMENT\*\***

Minimum grade required: C or better

**WRI 010** - College Reading and Composition (4.00)



**COMM 9** - Argumentation: Analysis of Oral and Written Communication (5.00)

--- Or ---

**COMM 9H** - Argumentation: Analysis of Oral and Written Communication - HONORS (5.00)

--- Or ---

**EWRT 1B** - Reading, Writing and Research (5.00)

--- Or ---

**EWRT 1C** - Literature and Composition (5.00)

--- Or ---

**EWRT 2** - Critical Reading, Writing and Thinking (5.00)

--- Or ---

**EWRT 2H** - Critical Reading, Writing and Thinking - HONORS (5.00)

--- Or ---

**PHIL 3** - Critical Thinking and Writing (5.00)

**END OF AGREEMENT**