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

Environmental Systems Science, B.S.

ADMISSIONS MAJOR SELECTION CRITERIA

Thank you for your interest in UC Merced!

For admission to the **Environmental Systems Science, 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:

- CHEM 002
- CHEM 010
- MATH 011 OR MATH 021
- *PHYS 018 & PHYS 018L OR PHYS 008 & PHYS 008L
  - * Please scroll below for information about how Algebra/Trigonometry based Physics courses can be accepted for admissions purposes.

Additional Recommended Major Preparation Courses: Recommended Prior to Transfer:

- Complete one Biological or Environmental Systems Science Course: ESS 001 or ESS 002 or BIO 001
- Complete one lower division Environmental Systems Science Course: ESS 010 or ESS 015 or ESS 020 or ESS 034 or ESS 040 or ESS 043 or ESS 050 or ESS 060 or ESS 065
- Complete one Computer Science Course: CSE 005 or CSE 019 or MATH 015
- Complete the additional Mathematics Requirement: Math 012 or Math 022
- Complete one Probability and Statistics Course: ECON 010 or PSY 010 or MATH 018 or MATH 032
- Complete the additional Physics Requirement: PHYS 019 & PHYS 019L or PHYS 009 & PHYS 009L
- Complete one additional lower-division Natural Sciences or Engineering courses. Relevant courses outside of Natural Sciences or Engineering may be allowed with approval.

AP Exam Score & Course Exemptions

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

ABOUT THIS MAJOR

The undergraduate major in Environmental Systems Science prepares students to understand and solve critical challenges facing our environment, such as:

- impacts of climate change
- water scarcity, pollution, and management
- soil degradation and conservation
- preservation of biological diversity
- management of natural resources

The major is highly interdisciplinary, integrating the study of fundamental physical, chemical, and biological processes that shape our environment with applications to real-world problems and sustainable solutions.

For more curriculum information, please visit the 22-23 catalog and the Four-Year Course Plan (We encourage to visit your Community College Counselor to create an individualize educational plan for transfer).

PHYSICS ADMISSIONS UPDATE FOR TRANSFER STUDENTS

Effective Spring 2023, the **Environmental Systems Science** major will accept a one-year sequence of Algebra/Trigonometry-based physics completed at another institution, in addition to calculus-based physics offered at community colleges. Although not a direct course equivalent, the one-year sequence of Algebra/Trigonometry-based physics can be substituted for the major requirements for PHYS 018/018L and PHYS 019/019L. Students who only have one semester of Algebra/Trigonometry-based physics will not meet the prereqs for PHYS 009 and 019 and would have to complete the series at a Community College.

For students completing the sequence at a California Community College, courses with C-IDs PHYS 105 and PHYS 110 or PHYS 100 S will be accepted towards the requirement.

Students electing to meet the requirement with Algebra/Trigonometry-based physics may be unable to take advanced courses in biophysics and other courses requiring calculus-based physics.

Please meet with your Community College Academic Counselor to discuss the Algebra/Trigonometry-based physics course option further.

MAJOR PREPARATION COURSES REQUIRED FOR TRANSFER

Minimum grade required: C or better
Required for admission

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)

--- And ---

MATH 011 - Calculus I (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 ---

****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)

- ***REFER TO TOP OF AGREEMENT***

←

PHYS 2A - 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)

ADDITIONAL MAJOR PREPARATION COURSES

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

MATH 012 - Calculus II (4.00) ← No Course Articulated

--- Or ---

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)

--- And ---

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

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)

--- Or ---

PHYS 019 - Introductory Physics II for Biological Sciences (3.00)
--- And ---
PHYS 019L - Introductory Physics II for Biological Sciences (1.00)
- ***REFER TO TOP OF AGREEMENT***

←
PHYS 2B - General Introductory Physics (5.00)
--- And ---
PHYS 2C - General Introductory Physics (5.00)

BIOLOGICAL OR ENVIRONMENTAL SYSTEMS SCIENCE COURSE

Select 1 Course from the following
Minimum grade required: C or better

ESS 001 - Introduction to Earth Systems Science (4.00)	←	No Course Articulated
ESS 002 - Sustainability Science (4.00)	←	No Course Articulated
BIO 001 - Contemporary Biology (4.00)	←	No Course Articulated

BIO 001 - Contemporary Biology (4.00) **--- And ---** **BIO 001L** - Contemporary Biology Lab (1.00) • *Acceptable substitute*	←	**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)

ENVIRONMENTAL SYSTEMS SCIENCE COURSE

Select 1 Course from the following

Minimum grade required: C or better

ESS 010 - Earth Resources and Society (4.00)	←	No Course Articulated
ESS 015 - Weather, Climate, and the Environment (4.00)	←	No Course Articulated
ESS 020 - Fundamentals of Geology (4.00)	←	**GEOL 10** - Introductory Geology (5.00)
ESS 034 - Introduction to Marine Science (4.00) Same-As: BIO 034	←	No Course Articulated
ESS 040 - Air Quality, Air Resources, and Environmental Health (4.00)	←	No Course Articulated
ESS 043 - Biodiversity and Conservation (4.00) Same-As: BIO 043	←	No Course Articulated
ESS 050 - Ecosystems of California (4.00)	←	No Course Articulated
ESS 060 - Global Environmental Change (4.00)	←	No Course Articulated
ESS 065 - Natural History of Dinosaurs (4.00) Same-As: BIO 065	←	No Course Articulated

COMPUTER SCIENCE COURSE

Select 1 Course from the following

Minimum grade required: C or better

Recommended to be completed prior to transfer

CSE 005 - Introduction to Computer Applications (4.00)	←	**CIS 3** - Business Information Systems (4.50)

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

PROBABILITY AND STATISTICS COURSE

Select 1 Course from the following

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

ECON 010 - Statistical Inference (4.00)	←	**MATH 10** - Introductory 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)
MATH 018 - Statistics for Scientific Data Analysis (4.00)	←	No Course Articulated
MATH 032 - Probability and Statistics (4.00)	←	**MATH 23** - Engineering Statistics (5.00)

NATURAL SCIENCES OR ENGINEERING COURSE

****REFER TO CATALOG****

One additional Natural Sciences or Engineering course	←	Articulates as Course-to-Course 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