Articulation Agreement by Major

Effective during the 2022-2023 Academic Year

To: University of California, Merced	From: De Anza College
2022-2023 General Catalog, Semester	2022-2023 General Catalog, Quarter

Applied Mathematical Sciences, Engineering Emphasis, B.S.

ADMISSIONS MAJOR SELECTION CRITERIA

For admission to the **Applied Mathematical Sciences, Engineering Emphasis, B.S.** major, students must earn an overall transferrable 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:

- MATH 021 AND Math 022
- PHYS 008 & PHYS 008L AND PHYS 009 & PHYS 009L

Addtional Recommended Major Preparation Courses: Recommended Prior to Transfer:

- * MATH 023 AND *MATH 024 AND MATH 032
- ENGR 057, ENGR 151(Lower division credit only)
- CHEM 002 or CHEM 002H
- Complete one of the following Computer Science course: BIOE 021 OR CSE 019 OR CSE 022 OR ME 021
- Complete one Biological or Environmental Systems Science course: BIO 001 or BIO 005 or ESS 001 or ESS 002 or ESS 005 or ESS 010 or ESS 015 or ESS 047 or ESS 050

* Math 23 (Vector Calculus) and * Math 24 (Linear Algebra and Differential Equations) are prerequisities for upper division Math courses. Completing them before transfer can help speed up time to graduation.

AP Exam Score & Course Exemptions

- An AP Mathematics: Calculus AB score of 4 or 5 exempts Math 021
- An AP Mathematics: Calculus BC score of 4 or 5 exempts Math 021 and Math 022
- An AP Mathematics: Calculus BC score of 3 exempts MATH 021
- An AP Mathematics: Calculus BC Subscore AB score of 3 or higher exempts Math 021
- An AP Chemistry score of 5 exempts CHEM 002 and CHEM 010
- An AP Computer Science: Comp Science A score of 5 exempts CSE 022
- An AP Biology score of 4 or 5 exempts BIO 001 and BIO 001L
- An AP Environmental Sciences score of 4 or 5 exempts ESS 001
- An AP Physics: Physics C: Mechanics score of 5 exempts PHYS 008 and PHYS 008L

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

Mathematics has been a central feature of humanity's intellectual achievements over the past several centuries. Its role in the physical sciences and engineering is well established and continues to aid in their development. Mathematics is also becoming increasingly important in the social and life sciences with a wide range of new applications requiring sophisticated mathematical techniques. Thus, the field of applied mathematical sciences is undergoing remarkable growth.

For more information on the **Engineering** emphasis, 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)

MAJOR PREPARATION COURSES REQUIRED FOR TRANSFER

Minimum grade required: C or better
Required for admission

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)
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)
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)

ADDITIONAL MAJOR PREPARATION COURSES

Minimum grade required: C or better

MATH 023 - Vector Calculus (4.00) • *Recommended to be completed prior to transfer*	←	**MATH 1C** - Calculus (5.00) **--- And ---** **MATH 1D** - Calculus (5.00) **--- Or ---** **MATH 1CH** - Calculus - HONORS (5.00) **--- And ---** **MATH 1DH** - Calculus - HONORS (5.00)
MATH 024 - Linear Algebra and Differential Equations (4.00) • *Recommended to be completed prior to transfer*	←	**MATH 2A** - Differential Equations (5.00) **--- And ---** **MATH 2B** - Linear Algebra (5.00)
MATH 032 - Probability and Statistics (4.00)	←	**MATH 23** - Engineering Statistics (5.00)

--- And ---

Recommended to be completed prior to transfer

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)
--- Or ---		
CHEM 002H - Honors General Chemistry I (4.00)	←	No Course Articulated

ENGINEERING EMPHASIS

Minimum grade required: C or better

ENGR 057 - Statics and Dynamics (4.00) • *Recommended to be completed prior to transfer*	←	No Course Articulated
ENGR 151 - Strength of Materials (4.00) • ***REFER TO CATALOG*** • *Lower division credit only*	←	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

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)
CSE 022 - Introduction to Programming (4.00)	←	**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 26A** - C as a Second Programming Language (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)
ME 021 - Engineering Computing (4.00)	←	No Course Articulated

BIOLOGICAL OR ENVIRONMENTAL SYSTEMS SCIENCE COURSE

Select 1 Course from the following

Minimum grade required: C or better

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)
BIO 005 - Concepts & Issues in Biology Today (4.00)	←	**BIOL 10** - Introductory Biology (5.00) **--- Or ---** **BIOL 10H** - Introductory Biology - HONORS (5.00)
ESS 001 - Introduction to Earth Systems Science (4.00)	←	No Course Articulated
ESS 002 - Sustainability Science (4.00)	←	No Course Articulated
ESS 005 - Introduction to Biological Earth Systems (4.00)	←	No Course Articulated
ESS 010 - Earth Resources and Society (4.00)	←	No Course Articulated
ESS 015 - Weather, Climate, and the Environment (4.00)	←	No Course Articulated
ESS 047 - Astrobiology (4.00) Same-As: BIO 047	←	No Course Articulated
ESS 050 - Ecosystems of California (4.00)	←	No Course Articulated

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