ENVIRONMENTAL SCIENCE, ASSOCIATE IN SCIENCE FOR TRANSFER (AS-T)

Program Goals and Objectives

Must address a valid transfer, workforce preparation, basic skills, civic education, or lifelong learning purpose.

The AS-T in Environmental Science prepares transfer students with a strong foundation in the natural sciences while orienting them toward the converging technologies reshaping environmental work. The environment that students will study and work in is increasingly engineered: AI systems model climate and predict pollution; robotic platforms monitor ecosystems and execute remediation; energy storage technologies transform landscapes and power digital infrastructure; blockchain networks verify carbon credits and track ESG compliance; and multiomic tools enable bioremediation and biodiversity genomics. These five technology platforms, combined with environmental economics/policy and entrepreneurship, define seven pillars of 21st-century environmental science. Innovation assets are projected to grow from $5 trillion to $28 trillion by 2030, data center investment from $500 billion to $1.4 trillion, and 85% of employers in the environmental sector are actively upskilling for AI and related technologies. This degree provides core scientific preparation for transfer to a CSU in Environmental Science while guiding students toward the technology, data science, policy, and entrepreneurship skills the workforce now demands.

The proposal must demonstrate a need for a program that meets the stated goals and objectives in the region the college proposes to serve with the program.

Comply with SB 1440 by providing a pathway for students transferring to a CSU in a major deemed similar. Additionally, this program addresses urgent workforce demand for environmental professionals who can operate across science, technology, data analysis, economics, and policy. The geospatial analytics market alone is growing at 13.6% CAGR (projected from $38 billion to $118 billion by 2034); GIS analysts earn a median salary of $73,500, and remote sensing specialists average $100,593. Employers across the sector are recruiting for AI, drone operations, IoT, and data science skills that the traditional science-only curriculum does not address. This program's advisory pathways help close that gap.

Program Student Learning Outcomes

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Upon completion of this program a student will be able to:
analyze how energy, water, carbon, and biological materials cycle through natural and engineered systems—from ecosystems to energy grids and data infrastructure—and evaluate how thermodynamic, biochemical, and biogeochemical processes drive these flows.
evaluate the environmental impacts of converging technologies—including but not limited to AI-driven monitoring, robotic systems, energy storage, blockchain-enabled environmental markets, and biotechnology—alongside pollution sources, population dynamics, and resource consumption; and assess technological, policy, and management strategies for mitigation.
apply sustainability principles across local to global scales to both natural ecosystems and engineered systems, including energy grids, digital infrastructure, environmental monitoring platforms, and technology supply chains.

Catalog Description

Includes program requirements, prerequisite skills or enrollment limitations, student learning outcomes, and information relevant to program goal.

Environmental science is the study of both natural and engineered systems—from ecosystems and climate to AI-driven monitoring, robotic sensing platforms, energy storage infrastructure, blockchain-verified carbon markets, and multiomic biotechnology. The field now operates at the convergence of seven pillars: artificial intelligence, robotics, energy systems, blockchain/digital infrastructure, multiomics, economics/policy, and entrepreneurship. As these technologies reshape how we monitor, manage, and build sustainable systems, environmental scientists must develop skills that span traditional science, data analytics, policy, and venture creation. This program prepares students for transfer to a CSU in Environmental Science while providing advisory pathways to build the interdisciplinary skill set that employers and the economy increasingly demand.

The development of the Associate in Science in Environmental Science for Transfer Degree (AS-T in Environmental Science) helps transfer students focus on the core prerequisite courses and supports them as they move toward their goal in transferring to a four-year institution. Students who complete this degree will satisfy lower-division general education and major requirements for transfer to a CSU in the Environmental Science program. Further, students who complete the degree will be guaranteed admission to the CSU system.

The Associate in Science in Environmental Science for Transfer Degree (AS-T) is intended for students who plan to transfer and complete a bachelor's degree in Environmental Science, or a major deemed similar at a CSU campus. Each CSU campus determines which of the degrees it offers are "similar" and can be completed with the preparation included in the AS-T in Environmental Science For a current list of what majors (and what options or areas of emphasis within that major) have been designed as "similar" to this degree at each CSU campus, please refer to the CSU's Associate Degree for Transfer Major and Campus Search (https://www2.calstate.edu/apply/transfer/Pages/associate-degree-for-transfer-major-and-campus-search.aspx) webpage and seek guidance

from a Moorpark College counselor. Students completing this AS-T degree are guaranteed admission to the CSU system but not necessarily to a particular campus or a major of choice.

Includes course requirements and sequencing that reflect program goals.

To earn an AS-T in Environmental Science, students must:

1. Complete a minimum of 60 semester units that are eligible for transfer to the California State University, including both of the following:
   a. The California General Education Transfer Curriculum (Cal-GETC) requirements.
   b. The required coursework for the AS-T in Environmental Science as listed in the Moorpark College catalog.

2. Complete all courses in the major and Cal-GETC with a grade of "C" or better or "P" if the course is taken on a "pass-no-pass" basis. Even though a "Pass/Credit" grade is allowed, it is highly recommended that students complete their major courses with a letter grade (A, B, or C). **Note:** the UC system allows a maximum of 14 semester (21 quarter) units of courses graded "Pass/No Pass" (Credit/No Credit) toward the 60 transferable semester units required for transfer admission.

3. Obtain a minimum grade point average (GPA) of at least 2.0 in all CSU-transferable coursework. While a minimum of 2.0 is required for admission, some transfer institutions and majors may require a higher GPA. Please consult with a counselor for more information.

4) Complete 12 semester units in the Ventura County Community College District.

Students transferring to a CSU campus that accepts the AS-T in Environmental Science will be required to complete no more than 60 units after transfer to earn a bachelor's degree (unless the major is a designated "high-unit" major at a particular campus). This degree may not be the best option for students intending to transfer to a particular CSU campus or to a university or college that is not part of the CSU system. Students should consult with a counselor to obtain more information on university admission and transfer requirements.

Advisory Notes

The world is changing fast, and the technology reshaping environmental work is converging even faster. The advisory notes help students understand this shift and how valuable it is to mirror that convergence in their own preparation — directing them to coursework across departments that builds competency in the seven pillars listed below, so they remain marketable, capable of creating value, and prepared to thrive in a world that increasingly rewards the integration of science, technology, and society.

1. The Seven Pillars: Environmental science now operates at the convergence of seven technology and skills platforms: (1) Artificial Intelligence—climate modeling, species identification, pollution prediction, automated monitoring; (2) Robotics—drones, remediation systems, precision agriculture, autonomous environmental sensing; (3) Energy Storage—grid-scale renewables, distributed generation, EV infrastructure, data center power systems; (4) Blockchains—carbon credit verification, supply chain transparency, ESG compliance tracking; (5) Multiomics—bioremediation, biodiversity genomics, ecosystem health monitoring, eDNA analysis; (6) Economics & Policy—carbon markets, environmental regulation, ESG frameworks, climate policy design; (7) Entrepreneurship—problem identification, solution design, venture development. Students should explore coursework across all seven areas to build a competitive, transfer-ready skill set.
2. AI & Data Science: 85% of environmental employers are actively upskilling for AI. It is strongly recommended that students complete at least one programming course (e.g., Python), one GIS/geospatial technologies course, and one statistics or data science course before transfer. GIS analysts earn a median salary of $73,500; remote sensing specialists average $100,593. These skills are increasingly baseline expectations, not electives.
3. Energy, Robotics & Technology Systems: Data center investment is projected to grow from $500 billion to $1.4 trillion by 2030 (30% CAGR). Students interested in energy systems, drone operations, sensor networks, or environmental technology should pursue physics, engineering, and technology coursework beyond the required sequences.
4. Blockchains & Digital Environmental Markets: Carbon credit verification, ESG compliance, and supply chain transparency increasingly rely on distributed ledger technology. Students interested in environmental markets and compliance systems should explore computer science and business coursework addressing digital systems and verification.
5. Economics, Policy & Entrepreneurship: Environmental technology must be deployed through policy, markets, and new ventures. Students interested in environmental implementation, regulation, ESG compliance, or building environmental solutions should pursue economics, political science, policy, and entrepreneurship coursework beyond the required microeconomics. Innovation assets are projected to grow from $5 trillion to $28 trillion by 2030—the opportunity space for environmental entrepreneurs is expanding rapidly.
6. Multiomics & Biotechnology: The biology track provides partial coverage of multiomic applications including bioremediation, biodiversity genomics, and eDNA analysis. Students on the biology track should consider additional bioinformatics or computational biology coursework to strengthen their preparation for this rapidly growing field.
7. Sequential Coursework: It is strongly recommended that sequential coursework in biology, chemistry, and physics be completed at a single institution. Students and counselors should discuss course options that align with the intended transfer institution's requirements.

Course ID	Title	Units/Hours
REQUIRED COURSES		
ENSC M01	Environmental Science	3
ECON C2001	Principles of Microeconomics	3
MATH C2210	Calculus I: Early Transcendentals	3-5
or MATH C2210H	Calculus I: Early Transcendentals - Honors	
or MATH M16A	Applied Calculus I	

STAT C1000	Introduction to Statistics	4
or STAT C1000H	Introduction to Statistics - Honors	
LIST A		15
LIST B		4
LIST C		10
Total Units for Major		**42**

Course ID	Title	Units/Hours
LIST A: Sciences - Select and Complete Option 1 or Option 2		**15**
Option 1 - Biology sequence with one semester of General Chemistry		
BIOL M02A	General Biology I	5
or BIOL M02AH	Honors: General Biology I	
BIOL M02B	General Biology II	5
or BIOL M02BH	Honors: General Biology II	
CHEM M01A	General Chemistry I	5
or CHEM M01AH	Honors: General Chemistry I	
Option 2 - Chemistry sequence with one semester of General Biology		
CHEM M01A	General Chemistry I	5
or CHEM M01AH	Honors: General Chemistry I	
CHEM M01B	General Chemistry II	5
BIOL M02A	General Biology I	5
or BIOL M02AH	Honors: General Biology I	

Course ID	Title	Units/Hours
LIST B: Select and complete two courses, the lecture must be associated with the lab		
GEOG M01 & M01L	Physical Geography and Physical Geography Lab	3, 1
GEOL M02 & M02L	Physical Geology and Physical Geology Lab	3, 1
GEOL M02H & GEOL M02L	Honors: Physical Geology and Physical Geology Lab	3, 1

Course ID	Title	Units/Hours
LIST C: Complete one of the Physics sequences		**10**
PHYS M10A & M10AL	General Physics I and General Physics I Lab	4, 1
PHYS M10B & M10BL	General Physics II and General Physics II Laboratory	4, 1
OR		
PHYS M20A & M20AL	Mechanics of Solids and Fluids and Mechanics of Solids and Fluids Laboratory	4, 1
PHYS M20B & M20BL	Thermodynamics, Electricity, and Magnetism and Thermodynamics, Electricity, and Magnetism Laboratory	4, 1

Course ID	Title	Units/Hours
Total Units for Major		42
Cal-GETC Pattern		34
Double-Counted Units		13
Total Units for the AS-T Degree		**63**

Plan of Study