STATE BOARD FOR COMMUNITY AND TECHNICAL COLLEGES
MAY 2023
PROGRAM PROPOSAL
BACHELOR OF APPLIED SCIENCE
ENVIRONMENTAL SCIENCES

CLOVER PARK TECHNICAL COLLEGE

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Program Information

Institution Name: Clover Park Technical College

Degree Name: Bachelor of Applied Science Environmental Sciences

CIP Code: 03:0104

Name(s) of existing technical associate degree(s) that will serve as the foundation for this program:

Degree: Associate of Applied Science - T Environmental Sciences and Technology

CIP Code: 15:0508

Year Began: 1993

Proposed Start Implementation Date (i.e. Fall 2014): Fall 2023

Projected Enrollment (FULL TIME EQUIVALENT) in Year One: 10

Projected Enrollment (FULL TIME EQUIVALENT) by Year: 12 by year 5

Funding Source: State FTE

Mode of Delivery

Single Campus Delivery: Lakewood campus

Off-site: Internship/capstone

Distance Learning: Face to face, hybrid, and online

Program Proposal

Please see criteria and standard sheet. ***Page Limit: 30 pages***

Contact Information (Academic Department Representative)

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Chief Academic Officer signature

The Program Proposal must be signed. To sign, double click on the signature line below.

X _____

Chief Academic Officer

Click or tap to enter a date.

Criteria 1

Curriculum demonstrates baccalaureate level rigor.

Introduction

Clover Park Technical College (CPTC) designed a Bachelor of Applied Science in Environmental Sciences (Bachelor of Applied Science - Environmental Science) degree program. This program is for technical associate degree graduates that want to advance their career options in environmental sciences. As an applied science curriculum, we intend to approach learning environmental sciences using hands-on tools in a realistic, practical context. Students will graduate with a practical understanding of environmental science, chemistry, and project management concepts as well as experience with a current set of tools.

Clover Park Technical College intends to offer this program in face-to-face, hybrid, and online modalities. We hope to accommodate working adults and place-bound students. The program's structure would also permit a student's completion with less than a full-time commitment. A typical full-time student would take 18 months to complete the program. A half-time student might take twice that.

Our ideal applicant would have a recent associate degree in Environmental Sciences and Technology, Biology, or a closely related field. The program is designed to accept technical associate degree holders who, through education or experience, are familiar with environmental science concepts at a junior level. However, students will be able to complete courses in the associates degree program to gain familiarity with needed concepts and skills. We expect that these bridge courses would comprise no more than 30 credits dispersed throughout the Bachelor of Applied Science program. A customized education plan would be developed depending on the background of the entering student.

Our ideal graduate would be a candidate for positions as an environmental technician, biological technician, or natural resources technician.

Program Outcome Development

We developed the Bachelor of Applied Science - Environmental Science degree curriculum with input from industry and academia. In search of rigor, we considered both the content (breadth, depth, and focus) and the cognitive level of learning outcomes. Development was informed by consultation with our program Advisory Committee, other experts in the field, and a survey of current and past students of our Associates programs.

Program Learning Outcomes:

1. Apply relevant federal, state, and local laws and regulations to problems involving the environment and natural resources.
2. Utilize appropriate health and safety regulations for planning, implementing, and managing projects in the workplace.

3. Employ scientific methodologies, technical instruments, and environmental data to analyze, evaluate, and create management decisions.
4. Collaborate to create solutions to real world environmental problems.
5. Develop leadership skills within the environmental sciences and natural resources management.
6. Evaluate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.

Program Evaluation Criteria and Process

Initially, we will evaluate the Bachelor of Applied Science - Environmental Science program on a quarterly, annual, and three-year cycle. We project quarterly evaluations for only the first three years to ensure that the College is fully supporting the program during its formation. Further, it confirms the program's adherence to our core values as well as our stated intent. Annual evaluations will be conducted as internal faculty assessments of students' ability to achieve program-level outcomes, which are at the core of our continuous quality improvement effort. Three-year evaluations are routine and known as Program Reviews.

Per Clover Park Technical College's Policy and Procedures Manual, we will conduct the formal Program Review of the Bachelor of Applied Science - Environmental Science program for effectiveness on a three-year basis. This review is supported by a variety of quarterly and annual assessments of various comprehensive indicators of program success and student satisfaction. The objectives of these assessments and reviews are to: recommend assistance, recommend resources, evaluate curriculum, evaluate the assessment of student proficiency, evaluate recruiting and retention, and identify outside influences and trends. In addition to formal program reviews, the Dean of Instruction may choose to employ other criteria and methods for assessing the entire program, drawing upon input from a variety of stakeholders, including the following:

Program Advisory Committee: Clover Park Technical College has a healthy and diverse Advisory Committee comprised of industry experts who provide perspective, evaluation, and feedback on the existing Environmental Sciences associates program. This advisory committee currently holds meetings two times each year.
Student Surveys: Upon graduation, students are surveyed as to what they perceived to be the strengths and weaknesses of all aspects of their experience, including classroom activities, pedagogical techniques, the relevance of specific courses, and other criteria, as appropriate.
Faculty Reflections: Regularly, the program faculty will meet as a team to discuss the program and its curricula as well as how they might be improved.
Course Evaluations: To provide specific feedback from the students' perspectives, Student Evaluation of Teaching and Learning (SETL) are distributed at the end of each quarter.

Annual Program Outcome Assessment

The faculty plans and executes an assessment of selected program outcomes annually. We document the plan and results of these assessments in a college-wide tracking system. For the Bachelor of Applied Science - Environmental Science program, faculty will map the program outcomes back through course outcomes. To create the assessment plan, we will select appropriate student course-level assessments that measure competency in the selected program outcomes. The

faculty plan and carry out the annual program outcome assessment. These annual assessments are also incorporated into and inform the Program Review.

Course Preparation Needed

Three types of students may enter the program. One is those students with non-environmental sciences associate degrees. Another type is graduates of the Clover Park Technical College associate-level Environmental Sciences & Technology program. A third type of student is associate-level environmental sciences graduates earned from other colleges with established articulation agreements or a prior learning assessment.

Students transferring with a technical associate degree will need to demonstrate that they have completed course work in:

- Ecology
- Chemistry
- Hydrology
- Earth Science (Geology/Environmental Geology)

We intend to initially match applicants' coursework course outcomes from their syllabi to our course pre-requisites. In this manner, we can assess if the course the applicant completed has prepared them to be successful in our program. This process should rapidly produce a matrix of acceptable courses from our sister colleges. This product would then become the basis for an articulation agreement.

Students will be required to successfully complete ENV 135 Hazardous Wastesite Operations and Emergency Response, ENV 251 Environmental Critical Areas (or equivalent), environmental sciences focusing on urban issues (e.g., ENV 231 Issues in the Urban Environment), and soil science (e.g., ENV 260 Introduction to Soil Science) prior to graduation. Students may enroll in associate degree courses to fill any gaps in complete coursework.

We are counting on the applicant's associate degree to contribute 90 transferable credit hours to the 180 total credit hours that make up a Bachelor of Applied Science degree. Of those 90 credit hours, 20 must count towards the 60 hours of general education credit needed for the Bachelor of Applied Science degree. Applicants who are missing any of the technology topics or are short of the 20 general education credits or 90 total credits will make-up those deficits in the program's Preparation Tier.

General Education Component

The General Education design builds skills, knowledge, and abilities in a progressive manner. From a starting point of college-level numeric, communicative, social, and scientific competency, students will learn and apply business communications, information literacy, statistical analysis, professional ethics, and organizational leadership in a professional setting.

The student's transferable general education experience from their associate degree, the 40 credit hours they earn in the Bachelor of Applied Science - Environmental Science program, and any credits they make up in the Preparation Tier will total at least 60 credit hours of General Education. Of the

60 credit hours, at least 20 will be upper-division. While there should be some latitude in the student's selection of general education courses, they will need to meet the credit distribution by subject shown below in Table 1. This distribution meets the Washington State Board for Community and Technical College's Bachelor of Applied Science Committee's recommendation for Minimum General Education Requirements for Applied Baccalaureate Degrees (WA SBCTC, 2023). Course descriptions appear in Appendix A.

Table 1. General education credit distribution.

Distribution Category (credits)	Associate of Applied Science-T	Preparation Tier	Lower Division General Education	Upper Division General Education
Communications (10)	College-level English (5)		ENG& 235 Technical Writing (5)	
Quantitative (5)	MATH& 146 Introduction to Statistics (5)			
Humanities (5)				PHIL 310 (5)
Social Science (5)	Sociology or Psychology (5)			
Natural Science (5)	Geology (5)			
Additional (20 upper division required)			CSMT& 220 Public Speaking (5) BIOL& 160 General Biology (5)	PSYC 311 Industrial and Organizational Psychology (5) MAT 311 Math for Operations Management (5) MAT 413 Measurement and Statistical Process Control (5) ENG 310 Business Communications (5)

Course work needed at the junior and senior levels

The Bachelor of Applied Science - Environmental Science program is designed with four tiers showing progressive development (Career Ladder model). The four tiers include:

Tier 1: Preparation
Tier 2: Acquiring Skills in Environmental Sciences and Management (Junior Year)
Tier 3: Skills and Applications in Environmental Sciences and Management (Senior Year)
Tier 4: Internship Project (Senior Year)

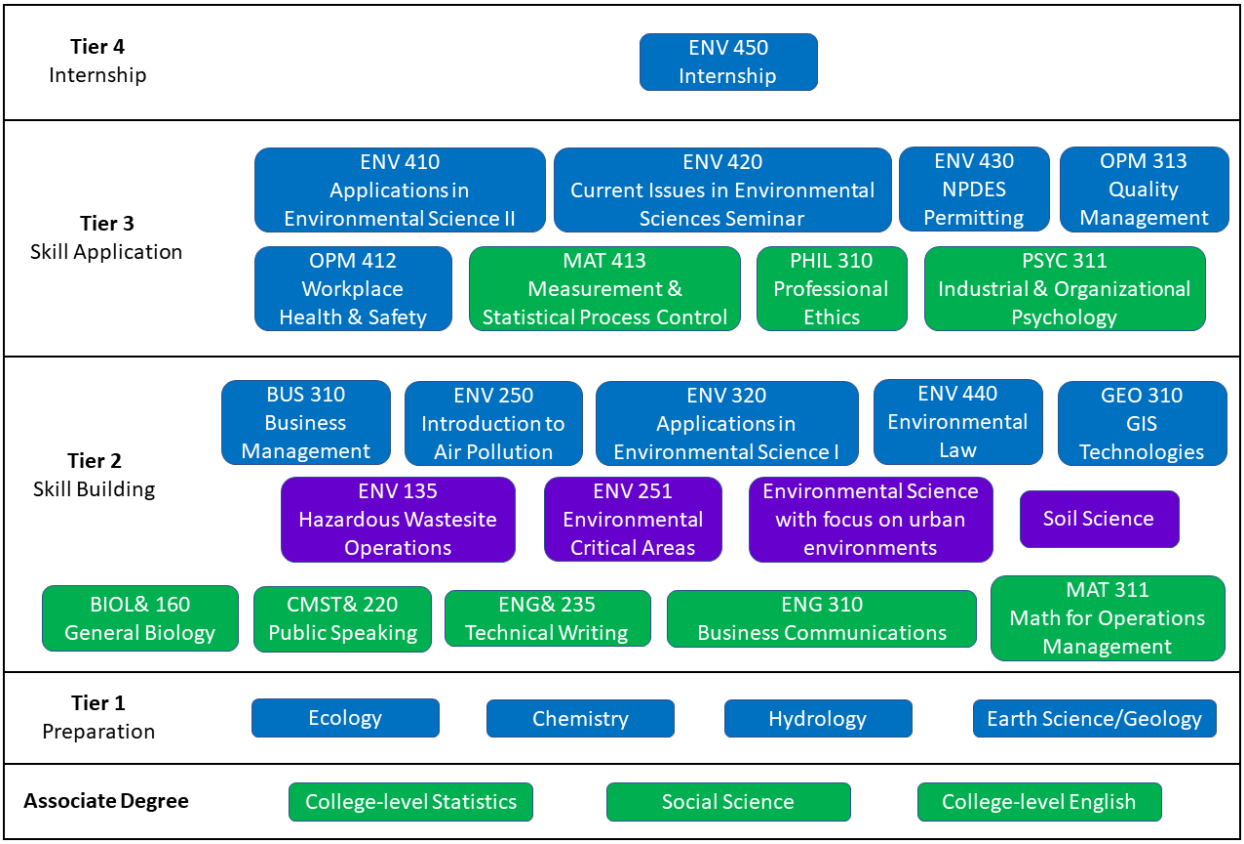

Figure 1. Curriculum Structure for Bachelor of Applied Science Environmental Sciences degree. Program courses have a blue background, General Education courses have a green background, and Bachelor of Applied Science Bridge courses have a purple background.

The first tier is an in-program pre-junior year preparation period of learning when students gain the skills, knowledge, and abilities required to be successful. It is our intent that most students will skip this tier entirely. Students without this preparation must complete the required coursework to make up their deficit prior to junior status.

The admission requirements for the Junior Year are:

Associate degree (transferable) totaling 90 or more credit hours including 20 credit hours of transferable general education coursework to include math, English, and social science. Applicants need to have maintained a minimum cumulative 2.3 out of 4 GPA for admission.

In keeping with SBCTC's aims for applied baccalaureate degrees (WA SBTC, 2022), the Bachelor of Applied Science - Environmental Science program has been designed to accept students with a broad range of educational backgrounds, and to facilitate students re-joining the educational system

after time in the workforce. Therefore, Tier 1 of the program is an academic bridge to allow students from "traditionally terminal" associates degrees to take any additional General Education and relevant freshman or sophomore environmental sciences courses needed to enter junior year and complete Bachelor of Applied Science degree requirements. The required prerequisite/preparation courses currently exist as daytime conventional vocational/technical or community college courses.

- Five quarter credit hours of Ecology coursework
- Five quarter credit hours of Chemistry coursework
- Five quarter credit hours General Environmental Science
- Five quarter credit hours Earth Sciences
- Five quarter credit hours of Statistics coursework

In the second tier (Junior Year), students acquire the skills, knowledge, and abilities to effectively wield a current set of tools commonly used by environmental sciences professionals.

This tier consists of five technical courses and four general education courses. The technical topics include air pollution, geographic information systems (GIS), environmental law, applied topics in environmental sciences I (e.g., conservation biology, restoration ecology), and project management. The general education topics include biology, math for management, technical writing, and business communications. Course descriptions appear in Appendix A.

The second tier also includes bridge courses for students that have not completed coursework in ENV 135 Hazardous Wastesite Operations and Emergency Response, ENV 251 Environmental Critical Areas (or equivalent), environmental sciences focusing on urban issues (e.g., ENV 231 Issues in the Urban Environment), and soil science (e.g., ENV 260 Introduction to Soil Science). Students without this coursework completed may still enroll in the Bachelor of Applied Science - Environmental Science program because they will be able to complete these courses as part of their Bachelor of Applied Science - Environmental Science education plan. As these bridge courses are not prerequisites for admission to the Bachelor of Applied Science - Environmental Science program, they are eligible for both grant and loan types of financial aid. Any prerequisites to program admission are eligible for financial aid but loans only.

In the third tier (Senior Year), we will continue to build tools and skillsets, while also applying these to applications in environmental sciences and project management. In this tier, students will use scientific and critical thinking to employ the tools learned in tiers one and two in a coordinated, thoughtful manner. Students will complete courses in environmental laws and NPDES permitting, applied topics in environmental sciences II (e.g., human-wildlife conflicts, green stormwater infrastructure), current issues in environmental sciences seminar, quality management, and workplace health and safety. General education topics include measurement and statistics, professional ethics, and industrial and organizational psychology.

These courses will allow students to use skills and tools learned in an applied setting to include analysis and evaluation of scientific data and studies. Furthermore, students will apply skills in management of environmental projects. In these courses, students will reach the analysis and evaluation levels of learning. Class assignments and assessments will reflect those required of

professionals in a variety of environmental science careers. Each assessment will require students to propose a project plan to analyze a problem, research solutions, execute the plan, and evaluate their results. Students will communicate their results as they would with customers in the field using both verbal and written communication. Efficient, clear writing of technical reports will become a refined skill.

In the fourth tier (Internship Project), each student will complete an internship or research project, along with a capstone course, to demonstrate mastery of the program learning outcomes. This student proposed project should tie together all the previous learning and will be faculty approved. The project scope will likely include components of earlier learning activities but must also include a novel component of the student's design. The Internship Project is designed as a culmination of students' education to practically apply and develop their skills, knowledge, and abilities on an internship/research project of their choosing.

Credit Budget

Students entering the Bachelor of Applied Science - Environmental Science program will have earned at least 90 credit hours while earning their associate degree. The total credit load for the Bachelor of Applied Science - Environmental Science degree is 90 credits plus any work needed in Tier 1 (Preparation). Thus, the Bachelor of Applied Science - Environmental Science degree pathway will have a minimum of 180 credits. The credit budget is indicated in Table 2.

Table 2. Environmental Sciences Bachelor of Applied Science credit budget

Educational Tier		Credits
Associate Degree		90
Tier 1	Technical and General Education as required	0-60
Tier 2	Acquiring Skills	45
Tier 3	Applications & Practice	33
Tier 4	Internship Capstone	12
	Total	180 (up to 210 to meet bridge course requirements)

Criteria 2

Qualified faculty.

Instructor Qualification

Clover Park Technical College recruits and employs well-qualified instructors. Instructors are encouraged to embrace lifelong learning and to maintain knowledge to industry standards and academic fields. Upper-division technical program instructors are required to have a Master's degree in a related discipline and at least three years' industry experience to teach full time in a

bachelor program. They also maintain a current Professional-Technical Faculty Certification. As the Bachelor of Applied Science - Environmental Science program incorporates existing general education and Bachelor of Applied Science courses, no additional faculty will need to be hired to teach upper-division ENV or general education courses. However, ENV courses developed for the Bachelor of Applied Science will require the existing faculty to occasionally exceed their course credit hour load. Between the additional ENV course credit load and general education courses, the total faculty full time equivalent allocated to the Bachelor of Applied Science - Environmental Science program will be 0.5 full time equivalent. This additional parttime faculty will be covered by adjunct or moonlighting contracts from existing faculty talent.

General education instructors are required to have a master's degree in their field. Faculty librarians contribute information literacy content in the context of both general education and technical courses. Faculty librarians possess at least a master's degree in library science. The educational credentials and a profile of instructors that we anticipate teaching technical program and general education courses is provided in Table 3.

In addition to the teaching faculty, Clover Park Technical College has a Bachelor of Applied Science Navigator/Manager who is shared among all Bachelor of Applied Science programs. The Navigator's role is to perform some outreach, assist in counseling applicants and students, collect and report "before, during, and after" student performance statistics, and offer career readiness assistance. The Navigator/Manager does not count against the instructor full time equivalent count and has capacity for additional programs.

Table 3. Profile and educational credentials of anticipated technical program and general education faculty

Faculty Name	Credentials	Status	Course(s)	
Dr. Derek Faust	PhD, Mississippi State University MS, Texas Tech University BS, Elizabethtown College	Full Time, Tenured	ENV 108 ENV 164 ENV 165 ENV 230 ENV 248 ENV 251 ENV 261 ENV 320 ENV 410 ENV 420 GEO 215 GEO 310	Introduction to Ecology General Chemistry Environmental Chemistry Rural Technologies Watershed Analysis Environmental Critical Areas Hydrology Applications in Environmental Sciences I Applications in Environmental Sciences II Current Issues in Environmental Sciences GPS Technologies GIS Technologies

Kathryn Smith	MES, The Evergreen State College BA, Washington State University	Full Time, Tenured	ENV 135 ENV 154 ENV 157 ENV 231 ENV 250 ENV 260 ENV 270 ENV 430 ENV 440 ENV 450 GEOL& 110	Hazardous Wastesite Operations and Emergency Response Site Characterization Environmental Site Assessment Issues in the Urban Environment Air Pollution Introduction to Soil Science Hazardous Materials Transportation NPDES Permitting Environmental Law Internship Environmental Geology
Erwin Swetnam	JD, Western State University College of Law BA, Political Science Idaho State University	Adjunct	PHIL 310	Business Communications
To Be Hired	Masters Required PhD Preferred	Adjunct	ECON 310	Managerial Economics
Dr. Ali Ostadfar	Ph.D., Engineering Sciences Simon Fraser University M.Sc., Biomechanical Engineering Tehran Azad Science and Research University B,Sc., Mechanical Engineering Tehran Azad University	Adjunct	BUS 310 OPM 313 MAT413 MAT311	Project Management Quality Management Measurement and Systems Process Control Math for Operations Management
Dr. Wendy Noffke	DC, Life Chiropractic College BS, University of Washington AA, Highline Community College	Full Time, Tenured	BIOL& 160	General Biology
Carolyn Van Beek	MA, Chapman University BS, Central Washington University	Full Time, Tenured	PSYC 311	Industrial & Organizational Psychology
Dion Alexander	MA, Western Governors' University BA, The Evergreen State College	Full Time, Tenured	MATH& 146	Introduction to Statistics

Kristin Copeland	MA, Liberty University BS, Pensacola Christian College	Director of Teaching and Learning	CMST& 220	Public Speaking

Administrators

Name	Credentials	Title
Dr. Thomas Broxson	EdD, Oregon State University MA, California State University, Fullerton BA, California State University, Fullerton	Vice President for Instruction and Chief Academic Officer
Dr. Claire Korschinowski	EdD, Brandman University MEd, Western Washington University BA, University of Washington	Dean of Instruction

Criteria 3

Selective admissions process, if used for the program, consistent with an open-door institution.

Selection and Admission Process

Clover Park Technical College's Bachelor of Applied Science - Environmental Science will not have a selective admissions process. Clover Park is committed to a first-come, first-served admission process consistent with an open-door institution. We will serve a diverse population by operating our recruiting and open admission process in our diverse local community and by encouraging diversity in our student body, faculty, and staff.

There are three options for entry paths into the Bachelor of Applied Science - Environmental Science program as described in Criteria 1:

- Clover Park Environmental Science and Technology Associate of Applied Science-T graduates
- Associate degree graduates in other programs at Clover Park Technical College or from other institutions.
- Environmental sciences associate degree graduates from institutions with whom we may develop articulation agreements or admit through a prior learning assessment.

Graduates of the Clover Park Technical College Associate of Applied Science-T Environmental Science and Technology program will be able to enroll on a first-come, first-served basis. To avoid lapses or interruptions for students who enrolled in the Associate of Applied Science-T program with the intention of continuing straight on to the Bachelor of Applied Science - Environmental Science, a brief priority registration window will be given to students of the most recently graduated cohort.

We believe in the importance of providing a solid path for many types of candidates, from those interested in expanding upon their skillset in the environmental sciences in a traditionally "non-technical" field to those just looking at changing their career focus.

Admission will be based upon a first-come, first-served basis for all candidates that fulfill the general education and associate degree requirements.

The admission process for graduates of other colleges with future articulation agreements will be determined by the articulation agreement itself.

Encouraging Diversity in the Bachelor of Applied Science - Environmental Science Program

Environmental Sciences is traditionally a non-diverse field. The Clover Park Technical College Environmental Science and Technology associates degree program typically sees 20-40% minority enrollment. The Bachelor of Applied Science - Environmental Science faculty will work with our Student Success department on strategies to maintain minority enrollment at the higher end of that range.

Credit may be awarded for military experience, as demonstrated through a student's military transcript, based upon guidelines from the Clover Park Technical College's admissions office. Credit for prior learning and experiential competencies gained through work will be assessed on an individual basis, according to institutional guidelines described in Clover Park Technical College's Policies and Procedures Manual.

We will serve a diverse population by operating our recruiting and open admission process in our diverse local community and by encouraging diversity in our student body, faculty, and staff.

Clover Park Technical College recognizes the benefits associated with a diverse student body, faculty, and staff; and like many colleges in the Community and Technical College system, we are addressing the need to enhance our diversity. The College recently created an Office for Equity, Diversity, and Inclusion with an Associate Vice President to oversee that office. Our plans to enhance diversity are still a work in progress and we cannot commit to specific strategies at this time. We do commit to continue to the work to be more diverse and to implement strategies as they are adopted by the College.

Criteria 4

Appropriate student services plan.

Introduction

The Office of Student Success at Clover Park Technical College includes the following services:

- Welcome Center
- Advising-Counseling
- Assessment Center
- Child Care Center
- Enrollment Services
- International Programs
- New Student Orientations
- Tutoring Center
- Outreach & Entry Services
- Student Aid & Scholarships
- Student Disabilities
- Student Life Programs
- Student Rights & Responsibilities
- Veterans Services
- Workforce Funding

The Vice President of Student Success is responsible for overseeing the services listed above.

Generally Available Services

Students in the Bachelor of Applied Science - Environmental Science program will have access to all support, advising, and counseling services generally available to students at Clover Park Technical College. Some of these services include:

- ***Welcome Center*** – The Entry Services team at Clover Park Technical College meets with students one-on-one to help them navigate the steps to get started at the college. The team can provide information about:
  - Clover Park Technical College's entry steps
  - Requirements for programs
  - Program costs and funding options
  - Registration preparation

The Welcome Center has extended hours on the second and fourth Wednesday of each month to align with our Program Information Sessions and be available to those who cannot make it in during regular business hours.

- ***Access and Disabilities Accommodations*** – (https://www.cptc.edu/disability/student) Clover Park Technical College is committed to providing reasonable accommodations for students of all abilities. Appropriate adjustments and assistive services or technologies will be provided to qualified students with disabilities during the recruitment, the application process, enrollment, registration, financial aid, course/module work, counseling, and program fulfillment. A Student Disability Specialist is on duty to be of assistance.
- ***Enrollment Services*** – Clover Park Technical College is dedicated to making the admissions experience as simple and intuitive as possible for new students. The registration process is available online (http://www.cptc.edu/register/). Credit evaluation, transfer review, and prior learning assessment are handled by the Credentials Evaluator and Student Completion Specialist in the Office of Enrollment Services.
- ***Advising & Counseling Office*** – (http://www.cptc.edu/advising) Provides support and

direction to help students meet their academic and career goals. Clover Park Technical College Counselor/Advisors provides both appointments and walk-in times to assist students and offers the following services:

- Academic advising and educational planning

- Career exploration resources and information

- Brief personal counseling on issues affecting a student's success, e.g., stress management, time management, study skills and adjusting to college

- Information regarding campus and community resources

- *Student Aid & Scholarships* – (http://www.cptc.edu/financial-aid) Reviews applications for aid and considers students for grants, loans, work-study funding, and other awards as appropriate. Students can apply, get information, monitor their applications, and view their awards online through the Financial Aid Student Portal. Appointments to meet with professional financial aid counselors are also available Monday through Friday during business hours. The office has extended hours through 6 PM on the second and fourth Wednesday of each month to align with Program Information Sessions.

- *Childcare Services* – (http://www.cptc.edu/childcare) The Hayes Child Development Center provides services for children ages four weeks to five years with a discount rate for Clover Park Technical College students and staff.

- *Library and Computer Labs* – (http://www.cptc.edu/library) Are newly renovated. The library and information commons are a "one-stop" learning center dedicated to providing facilities and resources that support Clover Park Technical College students, faculty, and staff. Its mission is to provide education leading to competencies that meet business and industry standards for the diverse workforce of today and tomorrow.

- *My Clover Connection* – (http://www.cptc.edu/mycc) Is a one-stop utility for managing all functions of student accounts. These include checking email, course scheduling, paying fees, dropping class, changing PIN or contact information, and viewing/ordering official transcripts.

- *Tutoring Services* – (http://www.cptc.edu/tutoring) Are available to help in a variety of subjects such as basic math, writing, accounting, calculus, and statistics. Clover Park Technical College's students also have access to eTutoring's free 24/7 online tutoring services in a variety of subject areas.

Program-Specific Services

Program Advising

Advising is the formal responsibility of Student Success staff; However, they work closely together with program faculty to advise students on course choice, discuss student progress, direct students to needed resources and assist with other program-related issues or problems. The College has a full-time Bachelor of Applied Science Navigator/Manager who will specialize in advising Bachelor of Applied Science students from application to graduation.

Academic Credit for Prior Learning

The management of the Academic for Prior Learning assessment will continue to be the responsibility of the Director of Enrollment Services, who reports directly to the Vice President of Student Success. Assessment of work submitted to gain credit for prior learning is the responsibility of qualified program faculty.

Lab and Classroom Facilities

The Bachelor of Applied Science - Environmental Science program will be based in Building 16. There are currently three classrooms assigned to the Environmental Science and Technology program with two program specific labs. Also, the program uses the College's chemistry lab in Building 15. Unique to Clover Park Technical College, the Bachelor of Applied Science - Environmental Science program will utilize the College's Outdoor Laboratory and Research Park at Flett Creek for coursework. The former Flett Dairy, this 110-acre outdoor space includes an 80-acre wetland as well as a critical Garry Oak habitat.

Criteria 5

Commitment to build and sustain a high-quality program.

Assumptions

The following lists assumptions of Clover Park Technical College's Environmental Science faculty and College administration for the development and sustainability of the Bachelor of Applied Science - Environmental Science program.

- Student enrollment projections are based on students enrolled in Bachelor of Applied Science - Environmental Science program courses and includes a five percent increase each year.
- The existing Environmental Sciences faculty will add additional Bachelor of Applied Science - Environmental Science courses to their workload starting in the fall of 2023. This will generate a 50 percent moonlight opportunity.
- The faculty positions will be a 0.5 full time equivalent for the 2023-2024 academic year because there will be one cohort.
- Benefits for faculty and staff are assumed to be 35 percent of gross salary.
- The per-credit tuition and fees are based on the FY 2022-23 rate and assume that students are taking full loads (maximum discount) and have resident status.
- There will be a student lab fee of $28.90 per class.
- Teaching will occur in all four quarters.
- Expenses in areas such as Goods & Services will be fully covered or leveraged by the existing Environmental Technologies program's overall program budget.
- The college's instructional support areas such as the Library and Student Services have their

own budgets, which cover program-specific support.

College Commitment

The college is committed to funding the costs associated with the launch of the program by utilizing existing college resources and revenues generated from tuition revenues generated from increased enrollment in this program.

Facilities, Equipment, and Instructional Resources

The Bachelor of Applied Science - Environmental Science program is a hybrid (online and classroom) program that requires no additional facilities beyond existing Clover Park Technical College classrooms and labs. Instructional support services such as the library and learning resources as currently established are adequate for the Bachelor of Applied Science - Environmental Science program.

Program Budget and Anticipated Revenue Over Time

Table 4. Anticipated program expenses and anticipated revenue over a four-year period.

		FY 23/24		FY 24/25		FY 25/26		FY 26/27	
		FTE	Headcount	FTE	Headcount	FTE	Headcount	FTE	Headcount
REVENUE	Fulltime enrollments to BAS-ENV	10	7	10.5	8	11	9	11.5	10
	Tuition Revenues from Increased Enrollment	$97,549		$111,485		$125,420		$139,356	
	Student Fees	$2,428		$2,774		$3,121		$3,468	
	Total Revenue	$99,977		$114,259		$128,542		$142,824	
EXPENDITURES	**A. Personnel Costs**	**FY 23/24**		**FY 24/25**		**FY 25/26**		**FY 26/27**	
	FTE (total for all personnel types)	0.5		0.5		0.5		0.5	
	Faculty	$30,184		$30,184		$30,184		$30,184	
	Fringe Benefits	$10,564		$10,564		$10,564		$10,564	
	Total Costs	$40,748		$40,748		$40,748		$40,748	
	B. Operating Expenditures	On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time
	Travel	$0	$0	$0	$0	$0	$0	$0	$0
	Curriculum Development	$0	$5,400	$0	$5,400	$0	$0	$0	$0
	Goods/Services	$3,000	$0	$3,000	$0	$3,000	$0	$3,000	$0
	Total Operating Expenses	$3,000	$5,400	$3,000	$5,400	$3,000	$0	$3,000	$0
	TOTAL EXPENDITURES		$49,148		$49,148		$43,748		$43,748
	Net		$50,828		$65,111		$84,793		$99,076

Criteria 6

Program specific accreditation.

The Bachelor of Applied Science - Environmental Science program requires no specialized program accreditation. With SBCTC approval of the Bachelor of Applied Science - Environmental Science

program, Clover Park Technical College will immediately file a Major Substantive Change Proposal with the Northwest Commission on Colleges and Universities.

Criteria 7

Pathway options beyond baccalaureate degree.

Bachelor of Applied Science - Environmental Science graduates would be able to enroll in master's programs at colleges accepting bachelor's degrees from accredited colleges and universities. The eligibility would depend on the specific master's program for which the graduate applied.

The Master of Environmental Studies and Master of Public Administration programs at The Evergreen State College would work very well for those students planning to continue their education post baccalaureate and are a relatively close (30 miles) and cost-effective option.

The School of the Environment at The University of Washington is another option. They offer many graduate degrees under the environmental science umbrella such as Master of Science in Environmental and Forest Sciences, Master of Arts in Urban Planning, and have a specific option for students with skills in technical disciplines, e.g. Master of Forest Resources.

Western Washington University offers a Master of Science in Environmental Sciences and upon program acceptance, we would approach them about an articulation agreement using their commensurate coursework option in their program prerequisites.

Graduates from Clover Park Technical College's Operations Management Bachelor of Applied Science have been admitted into a variety of state college and universities. We feel Bachelor of Applied Science in Environmental Sciences graduates would be as successful after reviewing program admission requirements.

Criteria 8

External expert evaluation of program.

Clover Park Technical College received external reviews from Dr. Cory Shoemaker, Assistant Professor of Biology at Slippery Rock University and from Mr. William K. Nash, Jr., Principal Investigator for the National Partnership for Environmental Technology Education.

Mr. Nash commented that the proposed program aligns with industry needs for environmental technicians and scientists and that graduates of the program would be competitive for positions in an industry projected to experience 5% growth per year. He identified the proposed program courses demonstrate sufficient rigor and are appropriate to a Bachelor of Applied Science in Environmental Sciences.

Mr. Nash recommends Clover Park Technical College create an advisory board for the Bachelor of Applied Science in Environmental Sciences program. Clover Park Technical College will expand our current advisory board to include more members rather than create a separate committee. The expanded committee will advise for both the associate degrees and the bachelor of applied science degree.

Dr. Shoemaker commented that the proposed program demonstrates a rigorous development of scientific and regulatory knowledge. He also expressed appreciation for the linkage of ethical and cultural knowledge to environmental problems. Dr. Shoemaker also commented the general education requirements will produce graduates who are well-adapted to a changing workforce. He noted the program includes pairing background theoretical principles with applied practical experience throughout the proposed courses. Dr. Shoemaker believes the proposed program is rigorous and the right size for the intended student population. He specifically noted Clover Park Technical College Outdoor Laboratory and Research Park "The close proximity and unfettered access to a field site is a fantastic resource on which to build an applied degree."

Dr. Shoemaker did question our response in Criteria 7 - Pathways beyond the Baccalaureate Degree. In our proposal, we specifically stated that students would be able to move onto The Evergreen State college for a post-baccalaureate degree (our intent was for the Master of Environmental Studies or Master of Public Administration.) It was not our intent to exclude other institutions or limit student options. At this time, we believe The Evergreen State College would be the best fit for our Bachelor of Applied Science graduates however, they may potentially consider the College of the Environment at University of Washington. When researching local colleges and universities, specific requirements for a Bachelor of Arts or Science degree are listed rather than a "four-year baccalaureate" degree. We are unaware if this is because of the relative newness of the applied science degrees or a specific limitation.

Attachment A – Course Descriptions

Bachelor of Applied Science - Environmental Sciences Professional Technical Courses:

ENV 250 – Introduction to Air Pollution

Provides a basic knowledge of sources, mechanisms, and health effects of noise and atmospheric air pollution and their interaction with the weather and other climatological conditions. Methods of regulatory-required air monitoring, sampling, and data interpretation will also be introduced.

Learning Outcomes

1. Describe the interaction of the atmosphere with air pollutants.
2. Identify meteorological factors that affect the transportation and concentration of air pollutants.
3. Determine pollutant concentrations in the atmosphere.
4. Identify primary and secondary air pollutants and their sources.
5. Describe the operation of air measuring instruments, pollutant sampling devices, and methods of analyses for air pollutants.
6. Perform fundamental atmospheric sampling statistical calculations.

ENV 320 – Applications in Environmental Sciences I

Students will learn to utilize ecological principles and concepts to solve real-world issues and provide recommendations for management of natural resources based in science.

This course will introduce you to the fields of mammalogy, ornithology, herpetology, ichthyology, entomology, and botany with applications to environmental management, conservation ecology, and restoration ecology.

Learning Outcomes

1. Explain core fundamental principles of applied ecology.
2. Use ecological survey techniques to sample animal and plant populations.
3. Convey basic ecological principles to a non-scientist and how they relate to real-world environmental issues in both written and verbal forms.
4. Apply critical thinking in interpreting ecological data.
5. Apply conservation biology and restoration ecology strategies in the management of biodiversity at the landscape level.
6. Write an ecosystem restoration plan or species conservation plan.

ENV 410 – Applications in Environmental Sciences II

A continuation of ENV 3XX Applications in Environmental Sciences I. This course will apply ecological and chemistry principles and data analyses to examine human impacts on the environment. Students will be introduced to topics of human wildlife conflicts, urban ecology, green stormwater infrastructure, toxicology, analytical chemistry, and chemical instrumentation.

Learning Outcomes

1. Evaluate human impacts on the environment for management and mitigation.
2. Explain management of human-wildlife conflicts.
3. Describe how fate of environmental pollutants affects toxicological and ecological risk.
4. Apply environmental management practices to reduce human impacts in rural and urban landscapes.
5. Use chemical measurements and instrumentation to collect environmental data.
6. Analyze environmental data to make environmental management decisions.

ENV 420 – Current Issues in Environmental Sciences Seminar

This course will use peer-reviewed published articles to examine a current issue in environmental sciences. Students will lead group discussions on papers they select related to the current issue.

Learning Outcomes

1. Develop comprehensive reading skills of scientific literature.
2. Determine validity of methods of scientific studies.
3. Evaluate implications of scientific studies.
4. Relate results of scientific studies to broader environmental issues.

ENV 430 – NPDES Permitting

This course provides the basic regulatory framework and technical considerations supporting the wastewater discharge permit development required under the National Pollutant Discharge Elimination System. This course highlights the development, issuance, and compliance with NPDES permits.

Learning Outcomes

1. Explain the purpose and structure of the NPDES program and the regulatory or legal actions that affect program development.
2. Explain how NPDES permits are issued including required information and appropriate terms.
3. Explain the Technology Based Effluent requirements for POTWs and how those requirements are implemented through the permit process.

4. Explain Water Quality Based Effluent Limitations (WQBELs) for non-POTWs and how those requirements are implemented through the permit process.
5. Calculate chemical specific WQBELs for non-POTWs.
6. Explain the monitoring and reporting requirements for NPDES permits.

ENV 440 – Environmental Law

This course is an overview of the United States' environmental law and policy. We will begin this course looking at our society's different interpretations of what is the environment and how those perceptions were created. The course then covers how our government regulates the environment, focusing on administrative law, case law, and constitutional concerns. Following this, the course focuses on the major environmental statutes: the Clean Air Act, the Clean Water Act, and the National Environmental Policy Act. We will move onto issues such as waste and natural resources management, including RCRA, CERCLA, and the Endangered Species Act. Included in this course is the role that race, ethnicity, and class play in environmentalism and environmental policy throughout these main topics.

Learning Outcomes

1. Explain the history of environmental policy in the United States including the movements that shaped its development.
2. Analyze the basic themes (e.g., scientific uncertainty, market failure, mismatched scale, cognitive bias, nontraditional interests) running throughout environmental laws and how these themes resonate in the field.
3. Evaluate the analytical frameworks (i.e., environmental rights, sustainable development, utilitarianism and cost-benefit analysis, and environmental justice) used in the creation of environmental law and policy.
4. Explain the regulatory process in the United States including Constitutional roles of the three branches of government and the delegation of rulemaking to administrative agencies.
5. Discuss both the criminal and civil processes of enforcing of environmental law including barriers to enforcement
6. Evaluate the major environmental statutes including their history, major goals, challenges, and enforcement.

ENV 450 – Internship

Experience the environmental science industry by procuring and participating in an internship. Students will work with their internship sponsor to develop learning objectives utilizing the skills and knowledge learned in the environmental science program. Requires a minimum of 150 hours of internship work within the quarter.

Learning Outcomes

1. Utilize technical skills and knowledge gained in program courses in a work-based learning

experience.

2. Follow the environmental organization's policies, procedures, and methods of operating.
3. Evaluate their weekly internship experience and the effect on their professional development.
4. Develop a professional presentation describing the internship experience.

GEO 310 – GIS Technologies

This course builds upon concepts learned in GEO 215 GPS Technologies. Covers advanced topics in geographic information systems (GIS). Focuses on becoming proficient in tools in ArcGIS relevant to environmental sciences. Covers creating files and maps and performing spatial analyses.

Learning Outcomes

1. Recognize the fundamentals and advanced applications of geographic information systems (GIS).
2. Utilize ArcGIS to perform map projections, edit files, and conduct spatial analyses.
3. Design a GIS to answer a spatial question related to an issue in environmental sciences.
4. Analyze a GIS to answer a spatial question related to an issue in environmental sciences.

OPM 313 – Quality Management

Equips students with the tools used to plan, implement, and manage quality management programs, with special emphasis on process documentation, staff training, and communication of results to management and auditors.

Learning Outcomes

1. Compare and contrast the quality management concepts espoused by Deming, and some of the resulting approaches such as Total Quality Management (TQM), Six Sigma, ISO 9000 and AS 9100.
2. Discuss quality requirements specific to regulated industries such as biomedical devices and aerospace.
3. Develop a plan for the implementation and management of a comprehensive quality management program within an organization with special emphasis on process documentation, staff training, and communication of results to management and auditors.

OPM 412 – Workplace Health and Safety Management

Provides a foundation for students to take on responsibility for the management of health and safety in the workplace. Covers OSHA and the inspection process, identification of safety hazards and implementation of preventative measures, and developing a formal health and safety training program.

Learning Outcomes

1. Define the elements of an effective workplace health and safety program.
2. Identify local, state, federal and international agencies and organizations concerned with workplace safety and health (e.g. OSHA, EPA, DOT, L&I) including their levels and limits of authority.
3. Determine the financial and social impact of common workplace injuries and illnesses, using quantitative measures wherever appropriate.
4. Develop written policies and procedures for use in a typical manufacturing environment.
5. Prepare a detailed workplace health and safety training plan, including refresher training, for a typical manufacturing organization.

Bachelor of Applied Science - Environmental Sciences General Education Courses

BIOL& 160 – General Biology

Provides an introduction to cellular biology for students preparing for the health professions. Major concepts include the structure, reproduction, and metabolism of cells; genetics; ecological perspectives; and evolutionary biology.

Learning Outcomes

1. Identify the characteristics and basic needs of living organisms and ecosystems.
2. Describe levels of biological organization and related functions.
3. Explain the concepts, themes and processes of growth and development.
4. Apply important principles of microscopy, scientific documentation and/or laboratory techniques to solve biological problems.
5. Draw conclusions based on observation, analysis, and synthesis of scientific principles.

CMST& 220 – Public Speaking

An Open Course Library class with inexpensive course materials. Assists students in developing real-world oral communication skills. Capture the dynamics of today's business realities and see the benefits of effective communication. Selection of topics, library research, analysis, oral style, use of visual aids, and preparation and delivery of various types of speeches and oral presentations are included. The Internet, email, community interaction, and other practical tools support student learning and increase public speaking skills. Emphasis is placed on principles of cultural diversity.

Learning Outcomes

1. Speak with attention to audience, purpose, and voice.

2. Use correct grammar conventions.
3. Follow correct conventions for documenting sources in presentations.
4. Utilize the iterative development processes.
5. Incorporate ideas from other texts.
6. Read and process sources using independent and critical thinking skills.
7. Use accepted public speaking modes and patterns of organization.
8. Speak clearly.
9. Apply accepted theories and models of interpersonal communication.
10. Orate to advance an argument through logical connections between claims, evidence, and explanations of evidence.
11. Identify counterarguments and counterclaims.

ENGL& 235 – Technical Writing

Focuses on technical writing skills and projects for industry and professions. Strong emphasis will be placed on principles of good writing and research techniques. Students will use appropriate technology and research to prepare letters, resumes, reports, proposals, newsletters, specifications, and other writing tasks typically required in a technical work setting. Discovery and knowledge of workplace ethics and guidelines as they pertain to writing will be researched, discussed, and used to enhance research. Requires use of technology including, but not limited to, computers, printers, and scanners.

Learning Outcomes

1. Apply principles of good writing in presenting technical information.
2. Research and access information through a variety of sources including technological resources.
3. Use critical thinking to select and evaluate appropriate resources and references.
4. Use numerical data/graphics to support technical information.
5. Use technology to prepare reports, descriptions, specifications, and other occupational writing tasks.
6. Use technology to prepare reports, descriptions, specifications, and other occupational writing tasks.

ENG 310 – Business Communications

Focuses on audience-oriented communication in the business environment. Course content includes writing reports, proposals, memoranda, and emails; graphical presentation of data using Excel; and

developing and delivering presentations using PowerPoint and other visual aids.

Learning Outcomes

1. Explain the meaning of the terms “time value of money”, “internal rate of return”, and “cost-benefit ratio”.
2. Explain cash flows, their estimation, and how to graphically represent them.
3. Perform calculations involving simple and compound interest, and rate of return.
4. Develop spreadsheets to solve common managerial economics problems.
5. Compare alternatives using net present worth, equivalent annual worth, internal rate of return, and cost-benefit analysis.
6. Apply cost estimation techniques and probabilistic risk analysis to make a decision among alternative courses of action applicable to a real-world, contemporary case study.

BUS 310 – Project Management

Coordination of projects involving multiple tasks and resources, and the resolution of the conflicts that arise is a critical skill in business. This course teaches students some of the techniques necessary to develop realistic and comprehensive project plans; identify risk areas; monitor the plans; and deal with problems. The course will also cover management of the procurement process, and communication with project stakeholders. The course includes the use of Microsoft Project to develop and manage project plans.

Learning Outcomes

1. Recognize the project management elements, procedures, and role of the project manager.
2. Identify topics and issues in a realistic project scenario
3. Apply the project management knowledge areas, tools & techniques to initiate, plan, design, perform, control, and close projects.
4. Utilize project management software to efficiently manage projects.
5. Produce and develop a project proposal.

PHIL 310 – Professional Ethics

This course increases students’ awareness of ethical dilemmas that might occur at work to show how such ethical issues are subject to management analysis and decision-making action and to provide students with the conceptual tools necessary to identify and develop an acceptable resolution to these dilemmas.

Learning Outcomes

1. Distinguish between ethical and other types of values
2. Define corporate responsibility, corporate compliance, and social responsibility

3. Compare differences in ethics in international communities
4. Evaluate the ethics of business decisions and general practices in business and the professions using systemic ethical reasoning
5. Communicate the resolution of ethical dilemmas effectively in oral and written forms

MAT 311 – Mathematical Techniques for Operations Management

Provides students with the foundational mathematical tools required for operations management, including acceptance sampling, decision theory, probability theory, and linear programming.

Learning Outcomes

1. Compare and contrast single- and multiple-sampling plans.
2. Construct a decision tree and use it to analyze a business problem.
3. Conduct sensitivity analysis of a simple decision problem.
4. Perform reliability calculations for a system.
5. Describe the type of problem that would lend itself to solution using linear programming.
6. Formulate a linear programming model from a description of a business problem.

MAT 413 – Measurement and Statistical Process Control

Introduces key tools used in statistical process control, including control charts, continuous improvement, acceptance sampling, and the design of experiments. Also covers fundamental metrology principles, including error measurement and analysis, the impact of temperature and pressure on precision measurement, equipment calibration, and advanced test and measurement techniques.

Learning Outcomes

1. Describe the DMAIC process (define, measure, analyze, improve, and control).
2. Design, use, and interpret control charts for variables and attributes.
3. Construct sequential and continuous acceptance sampling plans.
4. Design statistical experiments.
5. Explain, and differentiate between, the terms ‘accuracy’, ‘error’, ‘precision’, and ‘uncertainty’.
6. Create a calibration plan for a typical manufacturing organization.

PSYC 311 – Industrial and Organizational Psychology

Examines how people behave and interact with each other at work, with an emphasis on the way that this affects job performance. Topics covered in this course include the development of leadership skills, recruitment and retention, motivation, and team building, managing change, and conflict resolution.

Learning Outcomes

1. Write job descriptions for positions in a typical organization that follow best practices and comply with applicable laws.
2. Develop a workforce training strategy for a typical organization including training needs assessment, consideration of modality of training, and evaluation methods.
3. Analyze the skills that are generally considered to be essential for effective leadership.
4. Discuss the legal issues that must be considered during a typical recruitment process.
5. Carry out a mock interview and document the results.
6. Develop specific, measurable, and achievable goals for employees in a typical organization.
7. Compare and contrast different forms of individual and organizational incentives intended to motivate employees in a typical organization.
8. Develop a plan (including a communications plan) for managing the organizational change associated with an event such as a reorganization, downsizing, changes to working practices, or a company merger.
9. Explain the different types of conflict and causes of conflict that can arise in the workplace.

Attachment B – Short Bios of External Reviewers

Bios will be added after completion of external review. We are requesting that our reviewers provide their bio for accuracy.

Cory Shoemaker, Ph.D.

Dr. Cory Shoemaker is a tenure track Assistant Professor of Biology at Slippery Rock University of Pennsylvania. Dr Shoemaker holds a Ph.D. in Biological Sciences (2018) and a Master of Science in Wildlife and Fisheries Science (2013) from Mississippi State University as well as a Bachelor of Science in Biology and French from Ohio's Wittenberg University (2010).

Dr. Shoemaker instructs undergraduate students in the biological sciences, ecology, and wetland sciences. He also maintains an undergraduate research lab focused on plant ecology, invasion biology, and restoration ecology. He helped spearhead a curriculum redesign at Slippery Rock University to align instruction with current trends in the biological sciences.

Mr. William K. Nash, Jr.

Mr. Nash is the Principle Investigator for the National Partnership for Environmental Technology Education's National Institute for Environmental Health and Safety training grants. These training grants include Hazardous Waste Worker Training Program and the Department of Energy's Worker Training Program. Mr. Nash is the former Dean of Technical Education and Military Programs/Director for Midwest Occupational Safety and Health Education Training Center at Barton Community College in Kansas.

Mr. Nash developed six Environmental Health and Safety degree programs as well as other technical degrees. He also developed unique training programs for the United States Army as well as serving as a curriculum reviewer for the American Council for Education for military and credit programs.

Mr. Nash holds an M.S. in Higher Education Administration from Fort Hays State University, a Graduate Occupational Safety and Health Certificate from Columbia Southern University, a Bachelor of Science in Management from Upper Iowa University, and an Associate of Science from Barton Community College.