



Transforming lives through integrated education in a learning-centered community

Program Proposal (Parts C & D)
Bachelors of Applied Science for Sustainable Practices

February 25, 2014

Note: Changes made in the proposal in response to the Review Committee are highlighted in yellow

Form C:

Cover Sheet
New Degree Program Proposal

Program Information

Program Name: Bachelors of Applied Science for Sustainable Practices _____

Institution Name: Cascadia Community College _____

Degree: __BAS Sustainable Practices__ Level: __Bachelor Type: __Applied Science CIP Code: _03.01.0
(e.g. B.S. Chemistry) (e.g. Bachelor) (e.g. Science)

Contact Information (Academic Department Representative)

Name: Rosemary E. Sutton

Title: Vice President for Student Learning and Success

Address: 18345 Campus Way NE, Bothell, WA 98011-8205

Phone: 425 352 8255

Fax: 425 352 8265

Email: rsutton@cascadia.edu



January 31, 2014

Chief Academic Officer

Date

Table of Contents

Introduction	4
Criteria One: Baccalaureate Level Rigor	5
• Program Learning Outcomes	
• Program Evaluation Criteria and Process	
• Course Preparation Needed by Students Transferring with a Technical Associate Degree	
• General Education Component	
• Course Work Needed at Junior and Senior Levels in the BAS	
Criteria Two: Qualified Faculty	14
Criteria Three: Admission Process	16
• Admissions Criteria	
• Encouraging Diversity	
Criteria Four: Appropriate Student Services Plan	18
• Assessment	
• Advising	
• Counseling	
• CARE Team	
• Disability Support Services	
• Financial Aid	
• Veterans Services	
• Writing and Math Center	
• Support for Technology	
• Student Programs	
• Internship Support	
• Employment Placement	
• BASSP Support Services	
Criteria Five: Commitment to Build and Sustain a High Quality Program	21
• Program Funding	
• BASSP Enrollment and Financial Plan	
Criteria Six: Program Specific Accreditation	24

Criteria Seven: Pathways Options beyond Baccalaureate Degree	24
Criteria Eight: External Expert Evaluation of Program.....	25
Appendices:	
1. DACUM participants.....	29
2. New Proposed Courses	29
3. External Evaluator Resumes.....	33

Introduction

Cascadia Community College is known for its strong cultural value of living the basic tenets of a learning college. These tenets are imbedded throughout the curriculum, teaching strategies, academic structures, and operations, and are reflected in the mission statement: *“Transforming lives through integrated education in a learning-centered community.”* Sustainability and green practices have been a central theme for Cascadia since its inception.

The Bachelors of Applied Science for Sustainable Practices (BASSP) expands Cascadia’s commitment to sustainability and to the mission of transforming lives; it also fulfills crucial local and regional needs. Local industries from sustainability-related fields tell Cascadia that they desire bachelor level graduates, as well as opportunities for current workers to upgrade their educational levels to qualify for promotions or to move into management levels.

Cascadia’s existing two-year ETSP (Environmental Technologies and Sustainable Practices) program is designed to prepare students for the workforce at a technician level. Graduates exit the two-year program with specific technical skills, some project management skills, and a basic understanding of sustainable practices. The skills and competencies gained in the two-year program are a match for the needs of a variety of mid-level jobs. However, feedback from industries who work closely with Cascadia Community College and the documented gaps in Baccalaureate level workers in a variety of STEM areas in Washington State¹ indicate that the BASSP fills a crucial local industry and state need.

The BASSP student will leave the program with the ability to manage complex projects, operate at the management level and communicate changes needed at company and regional levels that ensure sustainable practices are interwoven at all levels in the community. A student graduating with a BASSP will have career options in government agencies, utility companies, energy efficiency businesses, non-profits, consulting and auditing organizations, water and agriculture industries, sustainable building/construction management firms and educational institutions.

This degree program is expected to attract students from multiple sources. First, it will appeal to students currently enrolled in (or just completed) 2-year programs who have an interest in the field and who want to continue to a Bachelor’s degree. Cascadia Community College has a very high transfer rate and the 2- year programs feeding into the Bachelors program include ETSP and other professional and technical programs as well as the traditional transfer programs. Second, we anticipate interest from post-baccalaureate students from a variety of majors because of the availability of jobs and the attractiveness of sustainability occupations. Third, we expect applications from incumbent workers who seek promotional opportunities in their

¹ *A Skilled and Educated Workforce: 2013 Update* Washington Student Achievement Council.

current workplace or the ability to pursue a higher level position outside their current company by attaining a bachelor level education. We also anticipate interest from high school students who wish to work in sustainability fields so we are planning clear curriculum guidelines for Running Start students.

A central theme of Cascadia has always been sustainability and green practices. The BASSP is an ideal fit for our commitment to sustainability and our mission to transform lives while also addressing local and regional needs. This degree is aligned with our strategic directions to increase student success through enhanced academic transfer and/or strengthened professional-technical partnerships.

Baccalaureate Level Rigor

Cascadia Community College has designed the overall curriculum and individual courses to meet the requirements for a Bachelor in Applied Science for the State of Washington using a variety of sources including a 2-day DACUM with 14 representatives from local Industry non-profit, and government agencies (see Appendix 1); faculty discussions at Cascadia Community College and Evergreen State College; and recent published research literature.

Basic competencies, knowledge and skills such as critical thinking, communication, physics, chemistry and mathematics are developed during lower division general education coursework. Technical skills such as energy use, auditing and environmental regulations and wind generation systems are attained during 100 and 200 level courses in the existing Environmental Technologies and Sustainability Practices (ETSP) courses. An introduction to systems thinking is also explored in these courses.

At the 300 and 400 levels, applied science courses and specific courses in humanities and social sciences extend and develop key competencies in sustainability (Systems Thinking Competence, Interpersonal Competence, Anticipatory Competence, Strategic Competence, and Normative Competence) as well as integrate the overarching themes (triple bottom line- environment, economics, social justice; resilience; and adaptive problems).

Program Learning Outcomes

The overarching outcome of the interdisciplinary Bachelor of Applied Science Degree in Sustainable Practices (BASSP) is intentionally designed:

To prepare students as resilient sustainability professionals who can implement meaningful change in response to complex environmental, economic and social problems.

Using an interdisciplinary approach that honors pluralism, innovation and creativity, and that is grounded in active learning, collaboration and global awareness, students learn to look beyond short-term solutions, which are appropriate for linear problems and move toward long-term approaches, which apply to intricate problems that encompass context, diversity and relationships.

The conceptual framework for the BASSP was based on the recent work of Wiek et al.² (2011) who provided a reference framework for academic program development based on a broad literature review. The authors identified five key competencies in sustainability: systems thinking, interpersonal, anticipatory, strategic and normative. Within each competence specific outcomes have been developed based on Cascadia's four learning outcomes (think critically, creatively and reflectively; learn actively; interact in diverse and complex environments; and communicate with clarity and originality).

Graduates of the BASSP will acquire these five key sustainability competencies and their respective learning outcomes:

Systems Thinking Competence

Systems Thinking Competence is “the ability to collectively analyze complex systems across different domains (society, environment and the economy etc.) and across different scales (local to global).” In relation to college learning outcomes BASSP graduates will be able to:

- Think Critically, Creatively and Reflectively:
 - Describe sustainability problem statements for research and analysis across different domains and scales
 - Use appropriate sources and frameworks to evaluate and investigate causal factors and approaches to addressing a topic
- Learn Actively:
 - Apply appropriate frameworks and methods to experiment and verify approaches to addressing a topic
- Interact in Diverse and Complex Environments:
 - Incorporate different perspectives to increase understanding of a system
- Communicate with Clarity and Originality:
 - Diagram and explain complex systems to multiple audiences.

Interpersonal Competence

Interpersonal Competence is “the ability to motivate, enable and facilitate collaborative and participatory sustainability research and problem solving.” In relation to college learning outcomes BASSP graduates will be able to:

²Competency definitions from *Key Competencies in Sustainability: a reference framework for academic program development* Arnim Wiek, Lauren Withycombe, Charles L. Redman, Sustainability Science, published online 19 May 2011.

- Think Critically, Creatively and Reflectively:
 - Evaluate critical approaches for arguing, debating and advocating for specific outcomes and goals associated with sustainable practices and methods
- Learn Actively:
 - Critique, defend and/or change own and others' perspectives to increase understanding
- Interact in Diverse and Complex Environments:
 - Develop relationships, identify allies and navigate organizational politics to facilitate collaborative research and problem solving
- Communicate with Clarity and Originality:
 - Discuss one's own and others' interpersonal and collaborative skills
 - Develop rhetorical skills and visual appeals for both effective oral presentations and written communication

Anticipatory Competence

Anticipatory Competence is the “ability to collectively analyze, evaluate, and craft rich ‘pictures’ of the future related to sustainability issues and sustainability problem-solving frameworks.” In relation to college learning outcomes BASSP graduates will be able to:

- Think Critically, Creatively and Reflectively:
 - Exhibit curiosity and creativity toward possible alternatives
 - Formulate innovative solutions
- Learn Actively:
 - Evaluate consequences of short-term vs. long-term decision-making processes
 - Research how elements within systems change over time, generating patterns and trends
- Interact in Diverse and Complex Environments:
 - Engage disruptive thinking strategies to open space for innovation
- Communicate with Clarity and Originality:
 - Describe sustainability issues using narratives, imagery, qualitative and quantitative information
 - Design effective media messages and images that promote cultural diversity, inclusion, and pluralistic views and perspectives.

Strategic Competence

Strategic Competence is the “ability to collectively design and implement interventions, transitions, and transformative governance strategies toward sustainability.” In relation to college learning outcomes BASSP graduates will be able to:

- Think Critically, Creatively and Reflectively:
 - Analyze and synthesize scientific and financial data around sustainability

- Select appropriate tools, practices, and methods to implement strategies toward sustainability
- Learn Actively:
 - Use industry tools, practices, and methods to implement strategies toward sustainability
 - Utilize broad and strategic thinking skills
- Interact in Diverse and Complex Environments:
 - Demonstrate and differentiate scenarios calling for self-direction, teamwork, and leadership
- Communicate with Clarity and Originality:
 - Analyze effective strategies for media use and consumption among a variety of diverse audiences
 - Strategically use persuasive appeals for marketing sustainable ideas, perspectives, and insights in both local and global communities through social media.

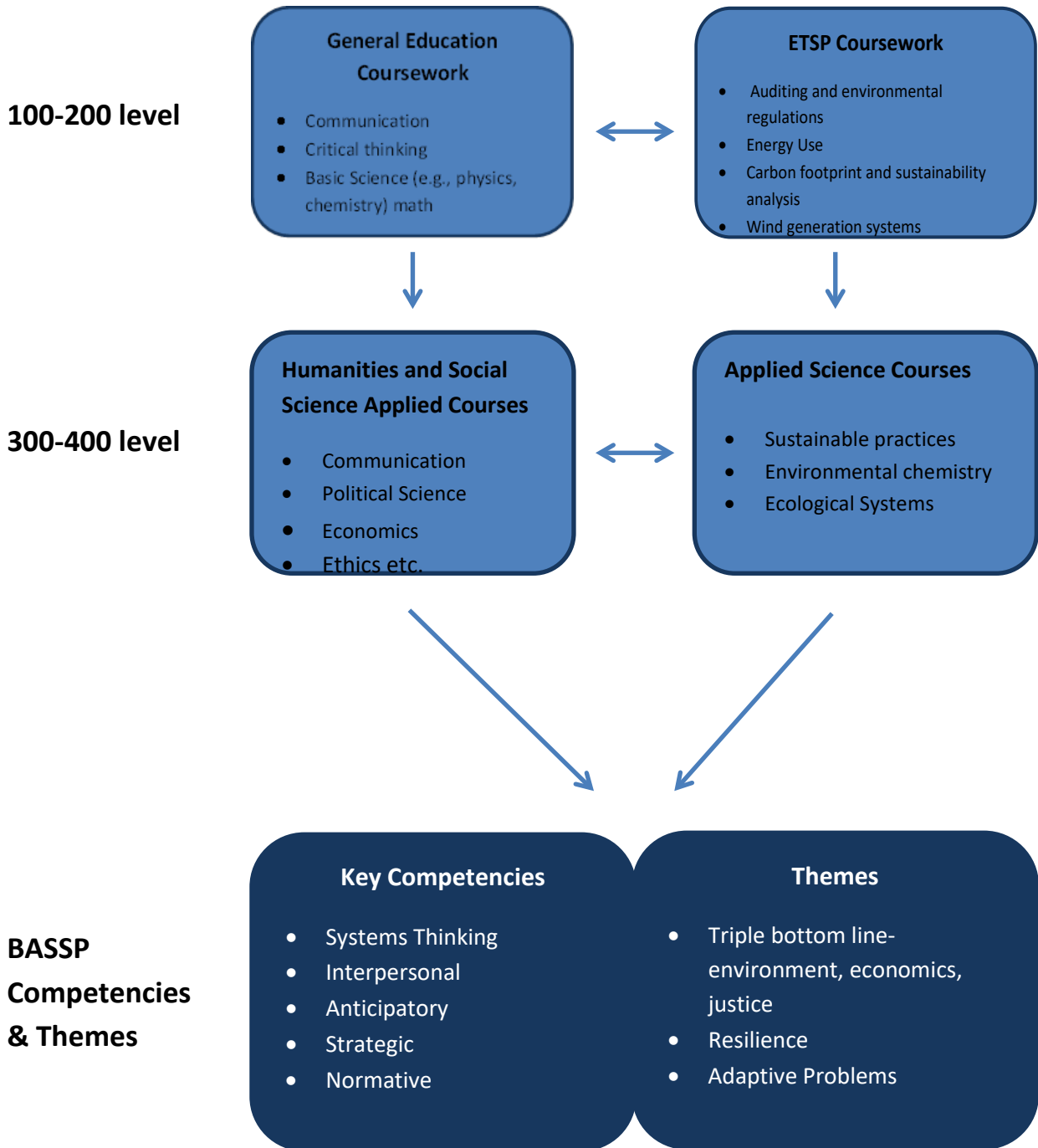
Normative Competence

Normative Competence is the “ability to collectively map, specify, apply, reconcile and negotiate sustainability values, principles, goals and targets.” In relation to college learning outcomes BASSP graduates will be able to:

- Think Critically, Creatively and Reflectively:
 - Evaluate and critique current structures and practices
- Learn Actively:
 - Examine leverage points where change has the greatest impact
 - Develop cultural competence and global awareness
- Interact in Diverse and Complex Environments:
 - Connect with people and place
 - Engage in critical issues of dissent and power imbalance
 - Participate in personal, social, and civic responsibility undertakings.
- Communicate with Clarity and Originality:
 - Argue ethical practices for engaging in community and global partnership

The overall curriculum design is represented in the figure below. Basic General Education and ETSP technical competencies are developed in the 100 and 200 level coursework. Upper division coursework includes carefully selected courses from humanities and the social sciences as well as applied science courses in sustainability. These courses develop and refine students’ knowledge in the key competencies in sustainability (systems thinking, interpersonal, anticipatory, strategic and normative) as well as overarching themes (triple bottom line - environment, economics and social justice; resilience and adaptive problems).

Overview of BASSP Curriculum Design



Program Evaluation Criteria and Process

Assessment for the Bachelors in Applied Science Sustainable Practices program is based on the ongoing comprehensive student achievement and program assessment processes for all programs at Cascadia Community College.

Cascadia conducts an assessment fair at the end of every quarter. Students from specific courses present their course projects for review by the entire campus community. Students enrolled in the BASSP will participate in this process with one target course each quarter. In addition, members from the community will be invited to view the projects at the assessment fair and provide feedback to the students and instructors on the quality of the work.

Program review occurs every four years and provides a comprehensive assessment of all aspects of each program. It includes a detailed analysis of the data including FTE and headcount enrollment retention, course pass rates, part time and full time faculty ratios, and an evaluation of the curriculum, program costs and revenues and articulation agreements. Reviews of professional technical programs also include feedback from an advisory committee. The BASSP Advisory Committee will include members of the existing ETSP advisory committee with one or two additional members. The role of the Advisory Committee is to provide input into recommended curriculum improvements; keep the curriculum abreast of changes in the field; assist with recruitment and placement and ensure the quality and scope of student work meets current industry standards.

The faculty coordinator, in collaboration with the faculty and staff, will collect annual data on enrollment, retention, effectiveness of the courses to meet program outcomes and student satisfaction. An analysis of this data will be shared with the Dean for Student Learning and VP for Student Learning and Success.

A summary of the methods used to assess the program follow:

Effectiveness of Curriculum and Program	
Course evaluations by students	<ul style="list-style-type: none"> • Effectiveness of teaching methods and curriculum
Assessment fair presentations	<ul style="list-style-type: none"> • Assessment of student learning
Student survey and/or focus groups	<ul style="list-style-type: none"> • Effectiveness of course and program design • Helpfulness of student services
Program statistics	<ul style="list-style-type: none"> • Application, acceptance, enrollment (FTE and head count) • Course pass rates • Student progression and retention
Faculty survey	<ul style="list-style-type: none"> • Preparation of entering students • Successful attainment of learning outcomes
Graduate Survey	<ul style="list-style-type: none"> • Assessment of program depth and relevance or key competencies
Industry Feedback and Recommendations	
Program Advisory Committee feedback	<ul style="list-style-type: none"> • Quarterly feedback from Assessment Fair • Annual review of curriculum and student progression • Evaluation of quality and scope of student work in relation to current industry standards
Annual DACUM review	<ul style="list-style-type: none"> • Review of DACUM, current curriculum, and industry needs
Intern assessment	<ul style="list-style-type: none"> • Employer feedback on students' performance during internship
Capstone project presentation	<ul style="list-style-type: none"> • Evaluation of capstone content and presentation
Employer Feedback	<ul style="list-style-type: none"> • Assessment of graduates' skills in relation to key competencies, resilience, and understanding of adaptive challenges • Relevance of curriculum to current industry needs

Course Preparation Needed by Students Transferring with a Technical Associate Degree

We anticipate that many students entering the BASSP will come from the ETSP program at Cascadia so the transition will be seamless. We also anticipate that students will come from related programs in the Puget Sound area such as: Clean Energy Technology at Shoreline; Energy Management at Edmonds; and Energy and Science Technician at Lake Washington. The general education credits gained in an applied

bachelor’s degree will transfer. Faculty and advising staff are planning careful articulation guides for technical course equivalencies.

General Education Component

General Education is a crucial component of any applied baccalaureate degree as it provides students with the basic foundation of competencies in communication, qualitative and symbolic reasoning, humanities, social sciences and natural sciences. Cascadia Community College believes that general education competencies are the foundation of the sustainability competencies. Students will learn the foundational skills at the 100 and 200 levels; coursework at the 300 and 400 levels will deepen these foundational competencies and also expand the competencies. These courses (or equivalent courses) are required. Students who enter the program and have already completed the courses will not have to repeat them.

Competency	Credits	Courses	Typical level of completion
Communication	15	ENGL& 101 or English Composition	Associate
		CMST 105 Communication in Organizations	Associate
		ENGL& 235 Technical Writing	BASSP
Humanities	5	PHIL 243 Environmental Ethics and Sustainability	Associate
Natural Sciences	10	BIOL 120 of Survey of Kingdom or CHEM&121 Introduction to Chemistry or GEOL&101 Introduction to Physical Geology	Associate
		PHYS 111 Physics of Sustainable Energy	Associate
Quantitative Symbolic Reasoning	5	MATH&107 or MATH&141 or MATH 147	Associates
Social Sciences	25	BUS&101 Introduction to Business	Associate
		ECON&202 Macroeconomics	BASSP
		POLS 206 State and Local Government	BASSP
		POLS 320 Introduction to Public Administration	BASSP
		PSYC 251 Organizational Behavior	Associate
TOTAL			60

Course Work Needed at Junior and Senior Levels in the BAS

Courses for the BASSP have been carefully selected to meet the key competencies of systems thinking competency, interpersonal competency, anticipatory competency, strategic competency and normative competency. Overarching themes (triple bottom line, resilience and social justice) are woven through the courses.

The upper division courses specialized BASSP include 70 credits (see below) as well as 20 credits of General Education coursework (see previous table on previous page).

Key Competency within upper-division BASSP	New Courses	Credits
Systems/Anticipatory/ Strategic/Normative /Interpersonal	SUPR 301 Introduction to Sustainable Practices	5
Interpersonal	SUPR 499 Internship – leadership	5
Interpersonal/ systems	SUPR 490 Capstone Project	5
Systems/Anticipatory	SUPR 410 Statistics and Research methods in Sustainability	5
Systems/Anticipatory	BIOL 420 Ecological Systems	5
Systems/Anticipatory	BIT 435 Data Science and Big Data	5
Interpersonal	CMST 340 Public, Civic and Community Advocacy	5
Strategic/Normative	ECON 460 Economics of Natural Resources	5
Systems/Anticipatory	ENVS 372 Environmental Chemistry, Pollution and Waste Management	5
Systems/Strategic	GEOG 380 Management of Global Natural Resources	5
Systems/Anticipatory	GEOL 364 Earth Systems and Global Climate Change	5
Anticipatory	HIST 345 Modernity and Technology in American History	5
Normative	PHL 460 Applied Ethics	5
Strategic/Normative	POLS 320 Introduction to Public Administration	*
Strategic/Normative	POLS 445 Environmental Politics and Public Policy Analysis	5
	Total	70

*Credits included in general education (see previous table)

The first quarter coursework will include a 2-course Learning Community to lay the foundation of the interdisciplinary nature of the program and Cascadia’s approach to integrative education. Learning communities, well established at Cascadia, are clusters of courses organized around a curricular theme that students take as a group. Faculty are experienced in using learning communities to strengthen and enrich students' connections to each other, their teachers, and the subject matter they are studying. The courses in the beginning Learning Community will be **SUPR 301** Introduction to Sustainable Practices and POLS 206 State and Local Government and will be taught by full time faculty members, Erin Richards and Gail Alexander.

The proposed recommended course taking sequence is below:

Year 1			
Fall	Winter	Spring	Summer
<ul style="list-style-type: none"> • SUPR 301 Introduction to Sustainable Practices • ENGL& 235 Technical Writing • POLS 206 State and Local Government 	<ul style="list-style-type: none"> • ENVS 372 Environmental Chemistry, Pollution, and Waste Management • GEOG 380, Management of Global Natural Resources • POLS 320 Introduction to Public Administration 	<ul style="list-style-type: none"> • General Education • GEOL 364 – Earth Systems and Global Climate Change • HIST 345 Modernity and Technology in American History 	General Education (if needed)
Year 2			
<ul style="list-style-type: none"> • BIOL 420 Ecological Systems • SUPR 410 Statistics and Research methods in Sustainability • ECON 460 Economics of Natural Resources 	<ul style="list-style-type: none"> • BIT 435 Data Science and Big Data • PHIL 460 Applied Ethics • POLS 445 Environmental Politics and Public Policy Analysis 	<ul style="list-style-type: none"> • SUPR 490 Capstone Project • SUPR 499 Internship – leadership • CMST 340 Public, Civic and Community Advocacy 	General Education (if needed)

Qualified Faculty

A full time tenure track faculty member will be hired in spring 2014 (prior to program launch) for recruitment, curriculum development, and general program administration needs. This coordinator will teach courses in the program as well as oversee the curriculum, scheduling, adjunct faculty recruitment and work closely with the advisory board. The coordinator will report to the Dean for Student Learning who reports to the Vice President for Student Learning and Services. Faculty from a variety of disciplines

have worked to develop the conceptual framework and curriculum of the program.

Key faculty members are listed below. A total of 2.3 FTE's will be devoted to the program by the second year of operation.

The faculty and administrators responsible for technical courses will meet certification requirements for professional and technical administrators and instructors in the Washington Administrative Code WAC 131-16-094.

Faculty Name	Credentials	Status	Course(s)
New Hire	PhD preferred	Full time tenure track	Environmental Technology Sustainable Practices
Brian Bansenauer	PhD, Aerospace Engineering	Full time tenured	Technology
John VanLeer	MA, Earth Sciences; BS, Physical Geography	Full time tenured	Earth Science
Gail Alexander	MA, Whole Systems Design, MS, Environmental Science, History of Science, & Oceanography, Nationally Certified Sustainable Building Advisor (CSBA), BSc, Zoology	Full time tenure track	Environmental Technology Sustainable Practices
David Ortiz	MA Speech Communications, BA Speech Communications	Full time tenured	Communications
Mark Nieman	BS, Mechanical Engineering	Adjunct	Environmental Technology Sustainable Practices
Chris Byrne	PhD, Mechanical Engineering ; MS, Science of Engineering; BS, Industrial Engineering	Full time tenured	Physics
Chari Davenport	MS, Journalism and Technical Writing; BA, Speech Communications	Adjunct	Communications
Erin Richards	MA, Political Science BA; International Relations	Full time tenured	Political Science
David Shapiro	MA Philosophy; BA Philosophy	Full time tenured	Applied Ethics/ philosophy

Admission Process

Admissions Criteria

Cascadia Community College has an open admissions policy. Adult members of the community 18 years or older, or those with a high school diploma, GED, or high school equivalency certificate are eligible to enroll in courses at Cascadia Community College. Students who satisfy the admissions criteria will be admitted into the BASSP program for the current selection cycle based on the date the completed application was received. In rare circumstances, a student's admission may be delayed if his or her 1-2 page statement (see below) and resume indicate very weak written communication skills. In these conditions, the Faculty Coordinator will meet with the student and suggest strategies for improvement and resubmission of the materials.

Once the program is full, additional applicants who satisfy the admissions criteria will be placed on an alternate list and admitted to the program for that selection cycle as space allows. If there is space, non-matriculated students may take selected courses with permission of the faculty coordinator and faculty members teaching the courses. This option is specifically designed for local professionals who may wish to take selected courses. Criteria for admission are:

1. Completion of an Associate of Applied Science, Associate of Applied Science-Transfer, or equivalent in an Environmental Technology or Sustainability program or related field from a regionally accredited college with a GPA of 2.5 or greater.
2. Completion of at least 25 credits of college level General Education with a minimum of a 2.0 GPA in each class:
 - English Composition (ENGL& 101 or equivalent) – 5 credits
 - Communication - 5 credits
 - Quantitative Reasoning (college level math with an intermediate algebra course as a prerequisite) – 5 credits
 - Social Sciences – 5 credits
 - Sciences – 5 credits
3. Completion of BASSP application packet which includes:
 - BASSP program application
 - \$30 application fee
 - Official transcripts from all colleges attended
 - 1-2 page statement outlining career and personal goals and describing how completion of the BASSP degree will support those goals
 - Resume

Encouraging Diversity

Student diversity at Cascadia Community College is increasing. In 2008-09, 28% of enrolled students were students of color; by 2012-13 this increased to 34%. This percentage exceeds that in the top feeder high schools (28% in 2012-13). Cascadia recruits students of color in the high schools through student groups and clubs and coordinating visits for ELL students throughout its service area. Additionally, Cascadia partners with the University of Washington Bothell to host informational events on the shared campus for community groups representing Black, Hispanic, Pacific Islander and Native American high school students. Cascadia also makes a concerted effort to connect with College Bound and undocumented students. Hispanic students are the fastest growing group and some recruitment materials are translated into Spanish. Bilingual staff members work in Student Learning and Success, HR and College Relations to assist students and family members with student learning and success.

Enrollment at Cascadia Community College is evenly balanced between male and female students (e.g., 49% females in 2011-12). This is in contrast to the under enrollment of males in the WSCTC system. Recruitment for the BASSP will be carefully designed to appeal to males and females as well as students of color. Social Justice is embedded as a core sustainability principle so Cascadia Community College believes that the curriculum of the BASSP will be appealing to students from diverse backgrounds. Teaching methods embraced by faculty represent best practices for an inclusive education. Efforts will be made to ensure representatives from industry partners represent a variety of backgrounds and speakers invited to campus will be carefully selected to encourage diversity.

Pluralism at Cascadia is an intentional culture where everyone's history contributes to the collective success of the community. The pluralism committee, chaired by President Eric Murray, strives to help the campus build an environment of trust, listen, gather and share stories so the community can build and sustain a college that is respectful, progressive, creative and innovative. The popular Center for Culture, Inclusion and Community supports all students by providing a welcoming environment to relax, do homework, discuss issues of social justice and diversity, and to access community resources. It also supports students attending the "Students of Color Conference."

Cascadia is known as a caring community. Small class sizes with frequent group work and highly responsive faculty creates a warm and welcoming atmosphere for all students. Over 94% of the students agree that Cascadia provides an accessible, inclusive and welcoming environment for all students (2012 Community College Survey of Students).

Appropriate Student Services Plan

Student Services works very closely with faculty, Deans and Associate Deans, and reports to the same Vice President. This approach has contributed to significant recent increases in new student retention: from 68% to 73% for the 2009 and 2012 degree seeking cohorts respectively. This successful collaborative approach will be continued for students enrolled in the BASSP. Enrollment at Cascadia Community College has been growing and the BASSP degree will contribute to this growth. A comprehensive analysis of the student services needs under projected growth and a newly approved ten year academic plan is underway. When complete, this analysis will indicate the additional student services staff needed when specific enrollment benchmarks are met. In this section of the proposal, we describe one new student services position (recruiter/advisor) dedicated to the BASSP. In the short term, other student services used by the BASSP students (e.g., financial aid) will be absorbed by the current staff. If overall college enrollment continues to grow additional student staff will be hired.

Assessment

Cascadia provides COMPASS placement testing for new students. Scores are evaluated and students are placed in appropriate courses according to Cascadia's placement standards. Assessment is waived for students who submit transcripts showing successful completion (2.0 or above) of college-level English or Math. Students may also submit COMPASS assessments taken at other colleges. Math assessments are only valid if completed within the last twenty four months before registering for classes.

Advising

Upon receipt of approval of the bachelor's degree, a new advising/recruiting position to support BASSP students will be authorized. This position, crucial to the success of the BASSP, is a component in the funding model (see below). The advisor/recruiter will recruit students, advise students about course taking, help problem solve student issues and work with the Faculty Coordinator to strengthen existing industry relationships and develop new relationships with local and regional sustainability-related non-profit groups, government, businesses and industry. Cascadia is fortunate in the caliber of its existing advising staff and all advisors will be trained to understand the essential features of the degree so they can provide an overview to students prior to making a referral to the specialist BASSP advisor/recruiter. If the enrollment of the BASSP exceeds projections, an additional recruiter/advisor staff member will be hired to support the students in the program.

Counseling

Counseling services are available to any student who is struggling with issues including family conflict, divorce, substance abuse, depression, grief and loss and anxiety about academic achievement. Counseling is confidential, professional, and free. Cascadia offers counseling services to students

through a partnership with Northshore Youth and Family Services. A Northshore counselor is available on campus 12 hours a week when classes are in session. In addition, students can also make appointments to meet a Northshore counselor off campus.

CARE Team

The Cascadia Consultation, Assessment, Response, Education (CARE) Team is comprised of staff from student services, student learning, safety, as well as faculty. The team connects students with college and community resources, provides consultation and support to faculty, staff and administrators in assisting students who display concerning or disruptive behavior and monitors the ongoing behavior of students who have displayed concerning or disruptive behavior.

Disability Support Services

Cascadia Community College maintains the Office of Disability Support Services (DSS) to help assure compliance with the rules and regulations set forth by various congressional acts, i.e., the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) 1990. The primary goal of the Office of Disability Support Services is to ensure access for students with documented disabilities and to contribute to the development of self-advocacy and confidence of students with disabilities. Cascadia provides reasonable and appropriate academic accommodations to enrolled students who have a documented permanent or temporary physical, emotional or sensory disability.

Financial Aid

The Student Financial Services office is committed to providing a comprehensive financial aid program for BASSP students who have need and meet other requisite conditions to be eligible for financial aid. Cascadia will offer aid, including loans, work study, grants and scholarships to meet BASSP educational expenses. Federal, state and local funds will be sought to provide scholarship support for BASSP students. Once the state approving agency and accrediting agency has approved the program, the BASSP will be submitted to the Department of Education for approval for the use of federal aid, including veterans' benefits. This process can take up to 180 days.

Veterans Services

Cascadia Community College is recognized as a veterans-friendly campus and has specific support services including a Veterans Resource Center, individualized academic advising and financial support services, counseling services and other specialized veteran services. Veterans wishing to pursue the BASSP will be able to access their Veterans Educational Benefits to assist with the completion of this program on campus.

Writing and Math Center

The Math and Writing Center provides individual and group tutoring in math and writing course concepts, along with workshops and study sessions. The center is open mornings, afternoons and evenings to accommodate a variety of student needs. In addition, students have access to the Western E-Tutoring Consortium that provides tutoring in a variety of science and math subjects.

Support for Technology

The Open Learning Center (OLC) provides technology assistance to support class assignments and offers an extensive list of technology-related services including a large computer lab; Macintosh based video editing stations and equipment check-out (laptops, calculators and audio-video equipment). Trained assistants and staff members are available to help individual students or small groups of students with a wide range of computer applications - including web technology and programming applications.

Student Programs

All students enrolled in at least one credit are members of the Associated Students of Cascadia Community College. As such, students enrolled in the BASSP program will be eligible to participate in all student activities that are provided at Cascadia. This includes, but is not limited to: Cascadia Student Government positions, Cascadia Activities Board positions, student clubs and organizations, campus events, co-curricular programs (i.e., drama, literary magazine). Students enrolled in the BASSP would be able to start a student club related to their area of study. A new student activities center, opening in 2016, will become a focal point for student programming and activities at Cascadia Community College and the University of Washington Bothell.

Internship Support

The advisor/recruiter dedicated to the BASSP will support students in finding internships. She/he will nurture the extensive existing relationships Cascadia has with employers in sustainability fields and also develop new relationships. **The advisor/recruiter will work with the existing program specialist for internships extending the internship services currently provided to Associate Degree students through dedicated program support.** The advisor /recruiter will assist students in finding an internship that meets their skills and interests and work closely with students to ensure that they understand the expectations of employers. When necessary, the recruiter/advisor will collaborate with faculty to coach students to meet employers' expectations.

Employment and **Career Placement**

Cascadia students are currently supported in finding a job or refining their choices in the sustainability field. Cascadia offers free and low-cost career services to Cascadia students and the local community,

including career events and help with resumes, cover letters, interviewing and career assessment. Students can get assistance at the Career and Transfer Center on campus for individual guidance. The advisor/ recruiter and faculty coordinator will develop close relations with the Advisory committee and employers and this will enhance employment and career placement. Documentation of career placement will be maintained and alumni of the ETSP and BASSP program will be asked to share their contacts and knowledge of employment information

BASSP Support Services and Early Alert

A student handbook for the BASSP will be developed prior to the beginning of the program to provide information about the requirements and services provided. BASSP faculty and staff will monitor the progress of all students enrolled in the program each quarter and intervene, when necessary, to ensure that students are successfully completing the program in a timely manner. The faculty coordinator, along with support staff will monitor student progression and retention and, with the assistance of the Director of Institutional Effectiveness, will gather longitudinal data to determine if changes in curriculum or students support services areas are needed. The Dean of Student Learning and Vice President for Student Learning and Success will closely monitor the program outcomes and assessment data to ensure students are provided extensive support needed to meet baccalaureate academic rigor.

Commitment to Build and Sustain a High Quality Program

The development of the BASSP at Cascadia Community College is widely supported on campus. The Board of Trustees approved the development of the BASSP in April 2013. The BASSP is a priority of the President and the faculty are enthusiastic about the prospect of a high quality baccalaureate program on campus. An ongoing task force comprised of general education and professional technical faculty, the Dean of Work Force Development, and the VPSLS meets regularly to develop curriculum and policies, consider admissions, and discuss recruiting and job placement. This task force will continue to meet regularly after the program has been launched.

The central theme for Cascadia has always been sustainability and green practices; consequently the BASSP is a logical expansion and deepening of these goals. This program is consistent with Cascadia's mission in transforming lives through integrated education in a learning-centered community.

Cascadia Community College has committed to fund the costs associated with program launch through college local funds of \$75,223 in 2014-15 and \$87,670 in 2015-16. Careful fiscal management has resulted in sufficient resources to support this new degree.

Program Funding

1. The plan is conservative in reflecting income and expenses for an initial cohort of 15 FTE students followed by an enrollment of 35 in year two and 40 in two subsequent years. Adjustments will be made for higher enrollment levels. The program is largely classroom based so increased enrollment would not require significant new equipment and facilities.
2. During the planning year (2014-15) two new positions will be authorized.
 - Faculty program coordinator (1.0) who will begin summer 2015.
 - Student Services Advisor/Recruiter (1.0). Planned starting date for this new hire is early spring 2015 to assist with recruiting, policy documentation and relationships with local industries.
3. Cascadia is fortunate to share library resources with the University of Washington - an R1 institution with extensive electronic resources. Resources are budgeted for additional library materials each year (\$7,000 during startup, \$5,000 in subsequent years). Library staff are experienced in providing high level support for faculty and students in bachelors and graduate programs; additional hours of library support are included.
4. The budget uses tuition and college support for the first two years of operation. Subsequent years will use tuition and fees to support the program. The assumption is a 3% tuition increase each biennium.
5. Salary increases are estimated at 2% every two years.

BASSP Enrollment and Financial Plan						
	2014-15	2015-16	2016-17	2017-18	2018-19	2018-19
Enrollment	Planning	15	35	40	40	45
Program Expenses						
Faculty Salaries (1.0 FTE) Benefits at 33%	18,288	74,480	74,480	75,970	75,970	77,489
Associate Faculty	-	14,936	60,197	61,401	61,401	62,629
Marketing and Outreach	10,000	10,000	5,000	5,000	5,000	5,000
Travel	1,500	2,000	1,000	1,000	1,000	1,000
Goods and Services	1,000	2,000	2,000	2,000	2,000	2,000
Advising/Recruiting Position (1 FTE) (Hire mid-year 2014- 15 to help recruit)	23,435	57,070	57,070	58,007	58,007	58,964
Curriculum Development	5,000	5,000	2,000	2,000	2,000	2,000
Professional Development	4,000	4,000	4,000	4,000	4,000	4,000
Library Resources*	7,000	5,000	5,000	5,000	5,000	5,000
Library Hourly		5,000	10,000	10,000	10,000	10,000
Equipment	5,000	5,000	5,000	5,000	5,000	5,000
Total Costs	75,223	184,486	225,747	229,378	229,378	233,082
Program Revenue						
College Support	75,223	87,670				
Tuition	-	96,816	225,904	265,921	265,921	308,136
Net Revenue	-	-	156	36,543	36,543	75,054

*Cascadia is fortunate to share library resources with the University of Washington - an R1 institution- with existing extensive electronic resources; consequently additional resources needed for the BASSP are limited.

Program Specific Accreditation

The accreditation of Cascadia Community College was reaffirmed in spring 2012 by the Northwest Commission on Colleges and Universities (NWCCU). The commission applauded the College for embracing environmental stewardship in operational practices spanning all campus units and for integrating sustainability into the College's curriculum. The proposed BASSP extends the curriculum integration of sustainability in new and important ways.

Upon approval from SBCTC the BASSP will receive NWCCU review through its substantive change process for inclusion in Cascadia's catalog of approved degrees and certificates. There is no currently recognized credential process for a Bachelor's in Sustainability.

Pathway Options Beyond the Baccalaureate Degree

Graduates of the BASSP may choose to pursue graduate programs in sustainability. Two options are available in NW Washington: Master of Arts in Environment and Community at Antioch College – Seattle and a Masters in Environmental Studies at Evergreen State College. Other relevant Washington State programs include the Masters in Natural Resource Sciences at Washington State University Pullman and the MS Environmental Science at Western Washington (for students with a strong science background). A variety of programs are offered in other States including a Master's degree program in sustainable solutions at Arizona State University; a Professional Science Masters concentration in environmental informatics at Tennessee Technical University; and a MS in sustainability management at Columbia University. According to the Association for the Advancement of Sustainability in Higher Education there are currently more than 400 sustainability-related master's degrees and 100 sustainability-related doctoral degrees offered worldwide.

Masters-level coursework in business or public administration will be an attractive option for some graduates of the BASSP. The Bainbridge Graduate Institute in Seattle offers a MBA in Sustainable Systems in a hybrid format, specifically designed for professionals. The Masters in Public Administration at Evergreen State College has a close relationship with the Center for Sustainability Infrastructure at Evergreen and reviewer Rob Cole, Emeritus professor at Evergreen, suggested this as a viable pathway. Marylhurst University in Portland offers an online MBA in Sustainable Business. The University of Washington offers a Masters in Public Administration as does Seattle University and many universities nationwide. The Milgrad Scholl of Business at University of Washington – Tacoma offers a Masters of Business Administration for experienced professionals and managers who plan to lead organizations facing an increasing impact of change. Graduates of the BASSP interested in environmental education may choose to apply to the Leadership for Sustainability Education (LSE) Specialization at Portland State University. This program is designed to develop leadership skills in sustainability education.

Graduate education in sustainability is a rapidly growing area so BASSP graduates will have a wide range of education options with programs within Washington State, within other US states, as well as other countries. We are continuing to explore possible pathways for BASSP graduates beyond the baccalaureate degree. Discussions with Antioch University - Seattle, Evergreen State College, and Bainbridge Graduate Institute are underway. We will continue to contact additional institutions to ensure smooth transitions for BASSP graduates.

External Expert Evaluation of Program

Arlene Abbott from Polar Star Consulting and Rob Cole Faculty Emeritus (Physics, Sustainability & Justice) at The Evergreen State College agreed to be the expert evaluators. Both reviewers provided a detailed critique and a summary of their comments and our response is below. Changes in the document that are in response to the reviewers' comments are highlighted in yellow.

1. What is your overall analyses and critique for this proposed degree?

The proposed BAS for Sustainable Practices degree program is an exciting one. The program proposal appears quite well orchestrated to meet distinct local and regional needs. I feel fortunate to have been asked to review it, and am quite impressed with the work that has gone into the proposal and the quality of the proposal at this stage. The suggestions that I make are at the level of elaborating or clarifying a few points in an otherwise excellent proposal The proposal outlines a set of new courses at the junior/senior level that address a mixture of natural science, social science and humanities perspectives. The proposed courses are certainly appropriate for a BAS degree, and connect well with the five key sustainability competencies and intended student outcomes. ..(Cole).

This paper's introductory remarks are spot-on: this is a great fit for Cascadia. The field itself is now a catalyst in the paradigm shift towards awareness of global sustainability needs/efforts. The resulting demand for "resilient sustainability professionals who can implement meaningful change in response to complex environmental, economic and social problems" is evident and growing. This is a need and a contribution Cascadia can address with its BASSP (Abbott).

2. Comments on the five key sustainability competencies, and their appropriateness

The five key competencies suggested by Wiek et. al. are comprehensive, and afford a robust basis to use functionally linked complexes of knowledge, skills, and attitudes that enable successful task performance and problem-solving (Wiek et. al., p.2). They form an excellent basis around which to structure a sustainability curriculum. The Cascadia proposal defines each key competence clearly and lists four learning outcomes for each of the five key sustainability

competencies. This portion of the proposal is clear, well-grounded, and represents a superb vision of overall learning outcomes for students who complete the curriculum (Cole).

This approach is both strategic and systemic and provides a solid foundation for research and teaching curricula. It is based on the solid meta-research of Wiek et al with its recommended "conceptually embedded sets of interdisciplinary competencies" -- and with each key competency having specific outcomes based on Cascadia's four learning outcomes. "I'd call it "airtight" (Abbott).

3. Is the baccalaureate curriculum heading in the right direction? Are there any major elements missing? Have we included any courses that you think are unnecessary?

Both reviewers said the curriculum was heading in the right direction. Reviewer Abbott, was *"struck by how closely paralleled the DACUM profile matched the proposed BASSP curricula"*

Revisions were suggested in two areas:

- (a) There was some confusion in relation to the presentation of courses in the draft document. The description of curriculum, courses and tables have been revised to clarify the presentation.
- (b) Reviewer Cole discussed several areas in the curriculum that should be modified or added. He said Cascadia should:
 - Introduce systems thinking earlier
 - Consider the role of mathematical modeling and systems thinking and the use of STELLA modeling software that does not require advanced quantitative skills
 - Include resilience as it is a crucial concept in sustainability work
 - Discuss adaptive challenges as the challenges in sustainability are complex and evolving
 - Make the role of Quantitative reasoning at the upper levels more explicit.

The BASSP advisory committee believed the suggestions strengthened the proposal and have revised the curriculum by adding an introductory course in the first quarter, modifying the focus of several of the applied Science courses and the research course, and also ensuring that core themes (e.g. resilience, adaptive challenge) and skills (quantitative and communication) are woven throughout the curriculum. Specifically:

- An introductory course **SUPR 301** Introduction to Sustainable Practices was added. This provides a framework for the BAS, introduces the concepts of systems thinking, triple bottom line (environment, economics and social justice) as well as the core themes of resilience and adaptive challenge.

- The course description of GEOL 364 Earth Systems and Climate Change was modified to include a more explicit systems thinking approach as well as introducing modeling software such as STELLA.
 - The focus of the SUPR 410 statistics and research course was modified to ensure quantitative reasoning skill development was explicit.
 - Descriptions of the Internship and Capstone were modified to ensure themes introduced early are developed throughout the program.
4. Reviewer Abbott provided a highly thoughtful discussion about program evaluation criteria and process. Following her suggestions we added evaluation criteria (alumni survey and additional feedback from industry) and extended external assessment in assessment fairs. We will use these suggestions during the more detailed program development and implementation.
- *Share Wiek’s research, including Table 2: “Overview of Core Concepts and Methods/methodologies as well as exemplary sources of the five key competencies in sustainability” – not only with students and graduating students, but also with Advisory Committee (p. 11/213). This will be included in SUPR 301 Introduction to Sustainable Practices and also discussed with the Advisory committee.*
 - *Develop evaluation scheme to examine evidence, depth and rigor of the key competencies as they enable research and problem-solving, and relate to graduate success in their field of work. Alumni and industry feedback has been added.*
 - *Develop evaluation scheme to examine evidence, depth and rigor of the methodologies used in research and problem-solving as they relate to graduate success in their field of work. This will be developed during the spring/summer 2014 curriculum work.*
 - *Be alert for evidence of any transformation of the business market, new business models, new professions and societal change at large as evolutionary steps of the sustainability field. Alumni and industry feedback has been added.*
 - *Invite graduates and their employers to campus to participate in “learning forums”, perhaps part of Assessment Fairs, and “mentoring forums” with internship and capstone students. Faculty will adopt this practice.*
 - *Look for opportunities for advisory members and faculty to partner in sharing learning and success at forums, conferences, and in papers. Faculty will look for these opportunities. The VPSLS will provide some additional travel support if needed.*
5. Student Services and Faculty
- The reviewers made no suggestion for improvement in these areas.

Appendix 1

DACUM Participants

1. Eric Carlson, Owner, Energy Environment Strategies (E2C2 Inc.)
2. Vicki Colgan, Sustainable Building Materials Management, Washington State Department of Ecology
3. Emma Johnson, Resource Conservation Manager, City of Bellevue
4. Kristin Kinder, Education and Outreach Coordinator, Waste Management
5. Kelly M. Kirkland, Education Services Manager, O'Brien & Company
6. David Landers, Manager, Business Energy Management, Puget Sound Energy
7. Tom Lienhard, Chief Energy Efficiency Engineer, Avista Utilities
8. Nancy Mason, Workforce Development Manager, Sustainable Works
9. Mark Nieman, Energy Engineering Manager, McKinstry
10. Kurt Sahl, Ed. Program Director, 21 Acres
11. Pete Segall, Energy Services Manager, ATS Automation
12. Clara Simon, Sustainability Manager, Capital Projects, University of Washington
13. Tom McLaughlin, Executive Director, Campus-US (Center for Advanced Manufacturing – Puget Sound)
14. Greg Bush, Manager, Environmental and Community Services, King County Wastewater Treatment Division

Appendix 2 New Proposed Courses

BIOL 420 - Ecological Systems

Students will examine how living organisms interact with each other and their environment. Students will see humans as an inseparable part of ecological systems, learn how humans have affected natural systems and explore ideas to ameliorate and/or prevent environmental degradation considering the key elements of environment, economics, and social justice.

BIT 435 - Data Science and Big Data

Students will deepen their experience with sustainability research using principles and techniques for building effective analytics applications. This course introduces the basic techniques of data science, including both SQL and NoSQL solutions for data storage and management. The course will focus on a project-based, team process for using historical data to predict future trends and translate predictions into action. Computing developments that spurred the existence of NoSQL databases, such as big data, distributed and cloud computing will also be discussed.

CMST 340 - Public, Civic, and Community Advocacy

Students learn how to develop and support arguments, evaluate and critically review evidence and practice oral debating skills. Emphasis is placed on introducing students to the practical application of analytical skills and competencies in framing and shaping public discourse. Coursework includes in-class activities and exercises that promote the use of both argumentation and negotiating skills in managing communication problems and challenges. Community based learning projects offer students the opportunity to collaborate with local community stakeholders and members in sharing and promoting active and ethical practices for engaging in public and civic discourse.

ECON 460 - Economics of Natural Resources

Students will learn to use economics to study the use, allocation and ownership of natural resources such as fisheries, forests, oil & gas, air, water, wildlife and natural areas. The early part of the course will develop a theoretical framework but the focus of the course will be a series of applications. Emphasis will be placed on the causes and effects of alternative institutions governing the use of natural resources with a focus on property rights, legal rules, regulations and administrative agencies.

ENVS 372 – Environmental Chemistry, Pollution, and Waste Management

This course is an examination of the applications of chemistry in industrial, municipal, and natural systems. Students will define pollution and examine various pollution sources that impact air, water, and soil. Toxicology will be introduced, as well as the fate and transport of pollutants in various environments and impacts to human and environmental health. Waste stream management will be discussed in terms of potential pollution, including disposal by engineered sanitary landfills as well as other methods used globally. Strategies for eliminating and mitigating pollutants will also be discussed, as will strategies for minimizing waste streams.

GEOG 380 – Management of Global Natural Resources

Students learn to identify critical natural resources throughout the world and their distribution. This includes, but is not limited to, water, fossil fuels, forests, soil, minerals, fisheries, and wild lands. Elements of extraction/harvest, distribution, and consumption of those resources will be examined in depth, along with environmental impacts. Management and conservation of those resources, along with alternative options, recycling, re-use, and waste will also be discussed.

GEOL 364 – Earth Systems and Global Climate Change

This course is a detailed examination of the elements and processes of Earth Systems Science (ESS). Students will apply ESS principles in analyzing the current climate system, its components, cycles, and feedbacks. Historical climate systems will also be studied, including methods of understanding those systems, and they will be compared and contrasted current data. Anthropogenic influences on the

current system will be examined in detail. Students will evaluate systems modeling using Stella as well as interpreting general circulation models. Mitigation and adaptation strategies will also be assessed.

History 345 - Modernity and Technology in American History

Students explore the history of modernity and technology as related to politics, economics, labor, business, the environment, public policy, science, and the arts. Modernity and technology, examined through this lens of historical enquiry, provides students with theoretical and practical knowledge that better prepares them to consider a future related to sustainability issues and sustainability problem-solving frameworks. Beginning with the market and transportation revolutions of the early 19th century United States, the course covers the changes and innovations, the promises, predictions, and criticisms, as well as the consequences, both intended and unintended, of such topics as industrialization, scientific management, American exceptionalism, and the Nuclear Age. Course materials will include an eclectic mix of sources, such as novels, science fiction, popular culture, and interpretative essays.

PHIL 460 - Applied Ethics

Students will come to understand the important environmental ethics challenges facing individuals, organizations and countries in the world, as well as the science that both understands those challenges and in some cases, either contributes to or alleviates them. Students will leave this class with a unique skillset: they will have developed the moral reasoning ability to formulate and defend positions on key environmental issues as well as the scientific reasoning ability to be able to put into practice solutions they may come up with.

POLS 320 - Introduction to Public Administration

Students learn the history and perception of the role of government in the provision of services, the context in which public administrators deliver services to citizens, as well as understanding of organization theory, personnel administration, budgeting and the administration and evaluation of policies and programs. Students will also learn the distinctions that set management of public organizations apart from that of private-sector organizations.

POLS 445 - Environmental Politics and Public Policy Analysis

Students will learn to formulate, evaluate, and implement public policy at local and state levels of government. Students will also examine environmental and natural resource issues from political perspectives considering both international and domestic political contexts. Students will learn methods of evaluating environmental policies from differing perspectives.

SUPR 301—Introduction to Sustainable Practices

This course establishes the framework for the Bachelors of Applied Science in Sustainable practices. Students will explore multiple interpretations of the concept of sustainability as they pertain to the key

elements of environment, economics, and social justice. Systems thinking will be introduced as a mechanism for understanding sustainability, and students will use systems as a way of understanding the interplay of various elements in developing and employing sustainable practices. Core themes of the degree will also be introduced, including themes of resilience and adaptive challenge. Students will also be introduced to the program's core competencies and outcomes as a way to visualize their degree pathway as it leads to the capstone project.

SUPR 499 - Internship

Students will develop hands-on experiences through a sustained relationship with a work setting in the field of sustainability. Students consider how the key sustainability competencies (Systems Thinking, Interpersonal, Anticipatory, Strategic, Normative) as well as resilience and adaptive challenge interact in their work setting. They will also reflect on their own strengths and weaknesses in their key competency areas.

SUPR 410 - Statistics and Research Methods in Sustainability

Students will learn basic principles in sustainability research methods, including environmental sampling and analysis, basic statistical techniques and principles that can be used to transform data into graphical representations that can be analyzed and presented to reveal complex information at a glance, generate insights and spur action. Research ethics and Human subject considerations will also be discussed.

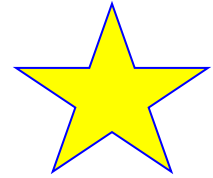
SUPR 490 - Capstone Project

Students will deepen their skills in all the five key sustainability competencies (Systems Thinking Competence, Interpersonal Competence, Anticipatory Competence, Strategic Competence, Normative Competence) through an applied project in sustainability. Particular emphasis will be placed on enhancing communication strategies for engaging effective interpersonal and group interactions within the context of the key elements of environment, economics, and social justice.

Appendix 3 External Evaluator Resume

POLAR STAR CONSULTING

Arlene M. Abbott, M.Ed.
P O Box 1224, Chelan, WA 98816
amabbott@frontier.com (509) 670-5743



Professional Experience

Polar Star Consulting, Owner, Organizational Development (OD), Facilitation, Training, Grant Writing	1998 – Present
IBEW Local 77, Project Manager for NUTEC Start-up	2011 – 2013
Chelan County PUD, OD Manager	2001 – 2006
Human Resource Investigations, Co-Owner State of Alaska	2000 – 2001
OD Manager, Alaska Professional Development Institute	1996 – 1999
Trainer, Alaska Professional Development Institute	1990 – 1996
Program Asst., DHSS Mental Health, Suicide Prevention Grants	1988 – 1990
Western Washington University	
Trainer, Bureau for Faculty Research, DSHS Grants	1984 – 1987

Accomplishments

- Successfully concluded 18-month start-up effort for IBEW Local 77: 70-acre utility training facility, “Northwest Utility Training & Education Center” (NUTEC), Richland, WA
- 25 years adult education, workforce training, organizational development experience
- Developed and managed Leadership From Within, a competency-based leadership development program for executive/senior management, directors, professionals, Chelan County PUD
- Served on competency-based pay for performance compensation taskforce – Chelan County PUD
- Managed State of Alaska professional training and organizational development services for Alaska’s 15,000 statewide employees, Alaska Professional Development Institute, self-supporting, non-profit
- Co-developed and delivered community development program for six indigenous Native Siberian tribes, Chara, Siberia, Russia, July 2002
- Invited Instructor, American Russian Center, University of Alaska Anchorage: delivered American management training to 85 cabinet level and senior level public administration officials, Government of Sakhalin, Yuzhno-Sakhalinsk, Russian Far East. With grants from the Eurasia Foundation and Exxon Corporation, February and May 1998

Education

Master of Education, Western Washington University, Bellingham, WA, 1986
Bachelor of Arts, Industrial Psychology, Western Washington University, Bellingham, WA, 1984

Presentations: American Public Power Association, Manage the Aging Energy Workforce; Western Energy Institute; Northwest Public Power Association

Published: NWPPA Bulletin, December 2003; Public Utilities Fortnightly, February 2004; APPA People to People, Spring 2004; Public Power, July August 2004

Affiliations:

- Society for Human Resource Management, Member, 1997-2012

- Apple Valley Human Resource Association, Member, Past Board Member
- Soroptimist International of Chelan, Member, President, Past Board Member
- Chelan Chase, 5K Run/Walk Fundraiser for Breast Cancer – Co-Chair 2005-2009
- Lake Chelan Chamber of Commerce, Member, 2000-Present
- Heritage Heights Assisted Living Facility, Board Member 2007-2009
- Hospice Foundation of North Central Washington, Member Pre-Campaign Committee, 2010-present

Resume: Robert S. Cole

Page 1 of 3

Present Position (since 2012): Faculty Emeritus (Physics, Sustainability & Justice)
The Evergreen State College, Olympia, WA 98505 (360) 866-0166,
rscole@evergreen.edu

Education

Michigan State University 1969 – 1972, Ph.D. (physics) 1972
Emphasis: theoretical physics, quantum electrodynamics
University of Washington 1966 – 1967, M.S. (physics) 1967
University of California, Berkeley 1963 – 1965, A.B. (physics) 1965
Occidental College, Los Angeles 1960 – 1963

Experience

The Evergreen State College, (1981 - 2012):
Member of the Faculty (Physics, Sustainability & Justice)
Member, North Carolina Energy Policy Council
(appointed by governor) 1977 – 1981
Chairman of its Research and Development Committee
Member, Board of Scientific Advisors, North Carolina Energy Institute
(appointed by governor) 1977 – 1981
University of North Carolina at Asheville, 1972 – 1981
Assistant Professor to Associate Professor, Tenured 1977
Chairman, Physics Department, 1978 – 1981

Professional Grants

Project Director, “Carbon Fluxes in Our Forest and Carbon Offsets As a Piece of
Evergreen’s Goal of Carbon Neutrality by 2020,” The Fund for Innovation, The
Evergreen State College, (\$28K), December 2007.
Project Co-Director, National Numeracy Network Summer Workshops of Quantitative
Literacy, the Washington Center for Undergraduate Education, NNN (\$30K) Aug 2002,
Aug 2003
Project Co-Director, “The Washington Center Calculus Dissemination Project,”
The Evergreen State College, National Science Foundation Grant
No. DUE 9352900 (\$252.6 K) July 1993 – March 1996
Project Co-Director, “The Washington Center Calculus Dissemination Project,”
The Evergreen State College, National Science Foundation Grant
No. USE 9153274 (\$225.4 K) August 1991 – January 1993
Workshop Co-Director, “Laboratory Computation for Introductory Students in
Chemistry and Physics,” The Evergreen State College, National Science Foundation
UFEP #CSI-88544220 (\$46.4 K), July 1988, and refunded as NSF UFEP #USE-
8950104 (\$49.9 K) July 1989
Plato Grant, “Using *Stella* Math Modeling Software in Environmental Modeling”
TESC, (\$1.1K) May 1995

- “Engaging Students From Underrepresented Populations: The Enduring Legacies native Cases Initiative,” by Barbara Leigh Smith, Linda Moon Stumpf, and Robert Cole, *Journal of College Science Teaching*, Vol. 41, No. 4, 2012, pp. 60 - 68.
- “Developing Models for Sustainability 101,” by Robert Turner, Robert Cole, Jean MacGregor, *et. al.*, Eighth International Conference on Environmental, Cultural, Economic and Social Sustainability, University of British Columbia, Canada, 2012
- “Impacts of Global Climate Change on Tribes in Washington, Parts I and II” by Robert Cole, 2011, a case study written for the Enduring Legacies Native Cases Project at The Evergreen State College. <http://nativecases.evergreen.edu/>
- “What are the Prospects for Energy Futures on Tribal Lands?,” by Robert Cole, 2010, a case study written for the Enduring Legacies Native Cases Project at The Evergreen State College. <http://nativecases.evergreen.edu/>
- “Can the Needs for Environmental Protection and Biodiversity and the Needs of Indigenous Peoples be Reconciled?,” by Robert Cole, 2010, a case study written for the Enduring Legacies Native Cases Project at The Evergreen State College. <http://nativecases.evergreen.edu/>
- “River Flow for Riparian Health,” by Robert Cole, 2009, a case study written for the Enduring Legacies Native Cases Project at The Evergreen State College. <http://nativecases.evergreen.edu/>
- “Native Fishing Practices and Oxygen Depletion in Hood Canal” 2007, a case study written for the Enduring Legacies Native Cases Project at The Evergreen State College. <http://nativecases.evergreen.edu/>
- “Lead Poisoning in Humans” by Robert S. Cole and Robert M. Tardiff, published in *Environmental Mathematics*, edited by Ben Fusaro (Mathematics, Florida State University), Mathematical Association of America, 2003
- “Visual Mathematics for Population Biology: An Approach for the 21st Century,” by Robert S. Cole, talk presented at Northwest BIO Conference, Yakima, May 2003
- “Modeling Lead Dynamics in the Human Body: A Lab for General Education Students,” by Robert S. Cole and Robert M. Tardiff, talk presented at the Joint AMS – MAA Annual Meeting, Baltimore, January 1998.
- “Implications of Using Mathematical Modeling Tools for Teaching Concepts,” by Robert S. Cole and Robert M. Tardiff, talk presented at the Joint AMS – MAA Annual Meeting, San Diego, January 1997.
- “Modeling Environmental Applications” by Robert S. Cole, talk presented at the Northwest Regional Mathematics Conference, Skamania Lodge, May 1996.

“Introduction to Environmental Modeling: A New Approach” by Robert S. Cole,
talk presented at the Joint AMS – MAA Annual Meeting, Orlando, January 1996.

Workshops Conducted for Faculty on New Approaches to Teaching Mathematics,
Environmental Modeling, Learning Communities or Native Cases

College of the Menominee Nation, Native Cases Workshop,	May 2010
Enduring Legacies Summer Workshop for Native Cases,	annually 2007 - 2011
Pre-Conference Workshop (with Karl Smith, U.MN) at the National Conference on Learning Communities & Undergraduate Education Reform	May 2004
Fairmont State University (W. Va.)	September 2003
Quant. Literacy Across the Curriculum (WA Ctr./MAA)	Aug 2002, 2003 & 2004
Project Kaleidoscope Summer Workshop:	July 2001
San Diego State University:	April 2001
Math Across the Curriculum Project (Edmonds CC):	Augusts 2000 through 2004 incl.
National Learning Communities Fellow (PEW):	July 2000, 2001, 2002, 2003, 2004
Washington Center for Undergrad. Ed. Ann. Mtg.:	February 1999, 2000, 2001
Washington Center Calculus Consortium:	February 1993, July 1994, February 1994, July 1995, July 1996, Novembers annually 1996 – 2004
University of Wisconsin:	October, 1995
Pierce College:	October 1994, May 1995, May 1996
Olympic College:	March 1995, May 1995, May 1996
Glendale Community College (Calif.):	May 1994
University of Portland:	April 1994
Kwantlan Community College (B.C.):	April 1993