



ACADEMIC PROGRAM PROPOSAL FORM

(Revised: October 2017)

DIRECTIONS: Use this form when proposing a new major or primary field of study, new emphasis (BAS only), or new degree or certificate (30+credits) program. For more detail on the NSHE program approval process, see the last page of this form.

DATE SUBMITTED: September 7, 2021

Date of AAC Approval:
12-01-21

INSTITUTION: College of Southern Nevada

REQUEST TYPE: New Degree
 New Major or Primary Field of Study
 New Emphasis (BAS only)

Date of Board Approval:

DEGREE: Check applicable box

- | | |
|---|---|
| <input type="checkbox"/> Certificate: 30+ Credits | <input type="checkbox"/> Associate of Arts (AA) |
| <input type="checkbox"/> Associate of Science (AS) | <input type="checkbox"/> AA/AS |
| <input type="checkbox"/> Associate of Applied Science (AAS) | <input checked="" type="checkbox"/> Bachelor of Applied Science (BAS) |
| <input type="checkbox"/> Bachelor of Arts (BA) | <input type="checkbox"/> Bachelor of Science (BS) |
| <input type="checkbox"/> Master of Science (MS) | <input type="checkbox"/> Master of Arts (MA) |
| <input type="checkbox"/> Doctor of Philosophy (Ph.D.) | <input type="checkbox"/> (Other or Named Degree) |

MAJOR OR PRIMARY FIELD OF STUDY (i.e. Animal Science): Environmental Conservation

INCLUDED IN LAST NSHE PLANNING REPORT: Yes No

(Website for NSHE Planning Reports: <https://www.nevada.edu/ir/Page.php?p=planning>)

TOTAL NUMBER OF CREDITS TO PROGRAM COMPLETION: 120

PROPOSED SEMESTER/TERM OF IMPLEMENTATION: Fall, 2022

Action requested (specify full program title):

Approval of a Bachelor of Applied Science (BAS) degree in Environmental Conservation at the College of Southern Nevada (CSN).

A. Brief description and purpose of proposed program. For proposed certificates (30+ credits), provide any existing degree or program under which the certificate falls.

The College of Southern Nevada (CSN) requests approval from the Nevada System of Higher Education Board of Regents for a new workforce development degree at the level of a Bachelor of Applied Science (BAS). This program is a good option for students where a traditional bachelors degree track proves not to be a good fit. This programming is a non-calculus and non-graduate school track that is focused on technician level skills. Graduates will be able to attain skills for

employment as a technician in support of a qualified Biologist within this growing and demanding field. This BAS program will have a technician emphasis in Environmental Conservation (BAS-EC) that will provide a distinctive baccalaureate degree pathway for students who attained an Associate's of Applied Science in Environmental Management (AASEM). This degree (BAS-EC) will further the AAS-EM technician level credentials to a workforce development degree so that a graduate will be able to further their environmental conservation technician skills.

This workforce development degree ("program") has the support and backing (see attached letters) from industry stakeholders such as Shoshone Village, Western Technologies, United States Bureau of Land Management, United States Forest Service, Nevada Department of Wildlife, Department of Conservation and Natural Resources, SWCA Environmental Consultants, and Terracon.

The BAS-EC technician pathway is designed to instill abilities and competence that focus on furthering the development of technician ("specialist") level skills including communication, decision-making, industry experience, the Endangered Species Act, and small project management with hands-on experience. The purpose of this BAS program is to build upon current vocational abilities while providing additional environmental conservation specialist skills needed within a specific field of emphasis.

This program is intended for all students, including non-traditional and place-bound students who have employment or family restrictions. It will accept transfer students from the completed Associates of Applied Science (AAS) degree at CSN, a degree that contains appropriate lower division program requirements. Student learning will focus on specialist level environmental skills with core knowledge in biological sciences. It will produce trained environmental specialist that can enter the work force in either the private or government sectors, filling empty and needed environmental specialist positions within Nevada and the surrounding region. Graduates will have direct transfer of learned skills and knowledge from higher education to their employers.

Within the sciences, environmental Conservation is a technical-generalist degree focusing primarily on the understanding of our natural and man-made environments. As stated above, this BAS-EC degree will draw from four core fields of study with a specialization within one of those four sectors. True to most science degrees, this program will require significant field and laboratory learning, experiential learning, and data-oriented efforts outside of the typical classroom setting.

This program is needed because, according to the Nevada Department of Administration (1), the population in Nevada is expected to grow through 2024. This rapid growth will place additional stress on environmental resources, increasing the demand for technically-trained scientists. The BAS-EC technician program at CSN will provide a pathway for non-traditional and place-bound students who require access to a baccalaureate program in close proximity to their homes. Graduates will fill projected job gaps in Nevada and surrounding areas. For a variety of reason, non-traditional and place-bound students are unlikely to pursue higher education unless it is in close proximity to their homes. CSN is in a unique position to provide this access to these students whose needs would otherwise not be met and an opportunity would be missed.

Sources: (1) (http://nsla.nv.gov/Library/StateDataCenter/Nevada_Population_Estimates_and_Projections/)

B. Provide a list and description of institutionally approved expected student learning outcomes

Students who graduate with a BAS-EC will have the following outcomes and be able to:

1. Summarize federal, county, state, and tribal policies driving natural resource policies.

2. Recall landscape ecology principles and technology to analyze ecological scenarios.
3. Recommend environmental techniques to develop management scenarios for working environmental conservation specialist.
4. Analyze biological data to inform and make management decisions regarding environmental issues.
5. Categorize natural resource decision-making utilizing effective communication techniques.
6. Select Best Management Practice (BMP) and scientific strategies for managing natural resources.
7. Assist in the preparation of Conservation Actions Plans (CAP), Biological Assessments (BA), Environmental Impact Statements (EIS), Informal Biological Assessments (IBA), and other efforts.
8. Show leadership skills within the environmental conservation and natural resource fields.

C. Provide an institutionally approved plan for assessing student learning outcomes

Individual courses will evaluate student mastery of program-aligned learning outcomes in methods appropriate for course content and goals. These measures will evaluate course, curriculum and faculty development efforts and will also support program assessment. Methods of evaluation may include but are not limited to:

1. Examinations and tests
2. Laboratory exercises, reports, and notebooks
3. Fields exercises and notebooks
4. Term and mid-term papers
5. In-person presentations
6. Discussion assignments
7. Employer feedback

Student evaluations will be completed in each course. Data generated will help shape course improvements, pedagogical training and program development. Surveys of current students and alumni will provide similar data for course and program development.

D. Contribution and relationship of program objectives to

i. NSHE Master Plan

As proposed in the 2021-2025 Planning Report from NSHE to the Board of Regents, this BAS-EC technician program will have the following emphases:

- Student-Focused System: The higher education system in Nevada will create a welcoming, respectful and friendly environment where all students have the opportunity to participate and succeed at every level of higher education.
- Increase the percentage of Nevada’s general population who participate in some form of higher education, whether through coursework, workforce training, certificate programs, or degree programs.
- Strive to increase the percentage of students that express a high level of satisfaction with teaching, advising, and overall educational experiences at CSN and other NSHE institutions.

- Nationally place-bound populations are less likely to attend or complete college when extensive travel between home and campus is required. Factors contributing to place-bound status include a lower value on education, remote location, social adjustment in moving to larger population centers, and family and employment circumstances. CSN is uniquely situated to address the circumstances and needs of this population of students in Nevada. Addressing the needs of these students is CSN's first mission. CSN has contact and support services for these place-bound students that cannot be addressed as effectively at other institutions of higher education.

Reputation for Excellence: Nevada's institutions of higher education will increase their national, regional, and statewide reputation based on targeted, outstanding, innovative programs and other accomplishments.

- Continue to develop and maintain technical programs, centers, and institutes that elicit national, regional, or statewide recognition for excellence.
- Contribute to Nevada's quality of life and the efficiency and productivity of the state's enterprises through public service rendered by Nevada's faculty, staff, and students.
- CSN is Nevada's first certified Hispanic Serving Institution (HSI).
- CSN has a highly innovative, technologically balanced approach to education that links the service area through combinations of traditional learning, online, and experiential learning. CSN is uniquely qualified to deliver programs in this setting. Providing access to this program is one step in developing environmental conservation professionals in across Nevada who are more likely to remain in Nevada where they are critically needed.
- Quality Education: Nevada's system of higher education consistently provides excellent learning experiences for its students through instruction, research, and service.
- Develop and implement an assessment plan and effective measures of student learning outcomes at each institution and for each academic program. Assessment plans for educational programs will be congruent with the differentiated missions of each institution. Each plan will be required to define student learning outcomes, assess student performance on those outcomes, and use results to improve teaching and learning.
- Develop effective measures of institutional performance, collect data on institutional indicators, and demonstrate results are used in the planning and evaluation process. These indicators will include the regular evaluation of programs and justification for program continuation.
- Increase the number of experiential and rich learning experiences available to place-bound students through creative performance, scholarly and research collaboration with faculty, and through community service learning.
- CSN closely links its programs and students through supporting course outcomes and will be assessed regularly. The availability of an environmental specialist degree programs to the place-bound students will enrich their opportunities to further their education in this discipline.
- A Prosperous Economy: Through a varied delivery of instruction, research, and service, higher education in Nevada will be an essential element in developing and sustaining a strong, dynamic, knowledge-based economy for Nevada.

- Develop and increase responsive educational programs that focus on state needs and critical shortages in identified fields.
- Increase the proportion of workers and the number of graduates in high-skill fields who come from Nevada’s higher education institutions rather than from out of state.
- Increase institutional collaborations with the private sector and target significant research resources to achieve specific economic development objectives.
- Increase and focus workforce development to meet community needs in those sectors with the highest potential for growth.
- As a STEM discipline, graduates with the technician level BAS in Environmental Conservation may serve within many high-demand workforce fields.
- Place-bound students are more likely to return to their home community, where the need for technical scientists is often critical, especially in Southern Nevada. Additionally, graduates of the BAS in Environmental Conservation technician program may find employment in a wide range of environmental professions, ranging from industrial companies, governmental agencies, private consulting and environmental firms.
- Building Quality of Life: Higher education in Nevada will be instrumental in advancing society’s objectives and enriching the lives of Nevada’s citizens.
- Increase public service and cultural opportunities that position higher education institutions as intellectual, cultural, and artistic centers and as a “marketplace for ideas.”
- Ensure that all students have an opportunity to experience some form of internship in their educational programs focus.
- The BAS in Environmental Conservation technician program is a basic science degree of wide application. The degree may be applied to professional positions, environmental studies, resource management, and others. All of these fields have need for people willing to work across Southern Nevada and the region.
- Opportunity and Accessible Education for All: Nevada’s System of Higher Education will increase the overall participation and, more importantly, the success of Nevadans enrolling at all levels of higher education and in all ethnic groups, and will address the unique educational needs of a highly diverse and non-traditional population.
- Raise the percentage of Nevada’s high school graduates who continue into postsecondary education within the NSHE system.
- Increase programs and courses designed to meet the needs of place-bound and working adults.
- Expand the use of shared, new, and existing facilities on weekdays, evenings, weekends, and summers for the most cost-effective delivery of education to the learner.
- CSN increases accessibility to students throughout Southern Nevada. The isolation of place-bound students makes them not readily supported by the current programs of Nevada’s Universities and State College. CSN already has in place existing infrastructure to provide this

program to its service area. This program will add enrollment to existing courses that are already being delivered with little increased cost.

The program aligns with the proposals in the E-Learning report (E-Learning and Higher Education's Iron Triangle: Opportunity, Affordability, and Student Success, 2/11/2013). Specific recommendations addressed by this program include:

- Recommendation 3: Invest in Distance Education and Related Policy Review.

At CSN, "distance education" means more than the basic use of online delivery of classes. The program will use online abilities to enhance most classes, but will also use a large degree of delivery through experiential learning formats. CSN is highly invested in using this effective method of synchronous delivery that enables CSN instructors from all three main campuses and annex locations to reciprocally offer course content. Laboratory classes must generally be provided in a classroom format with those facilities located at one of the three main campuses. These classes are an important component of this program. In the future, technology will be developed to address some of the courses through dual synchronous and asynchronous (recorded and available later) formats. Current CSN's infrastructure, policy, and scheduling are in place for this program to utilize.

- Recommendation 6: Invest in a Shared Student Learning Portal and Student e-Portfolio.

Currently, all four of Nevada's community colleges share the Canvas LMS, and Canvas provides options for creating Student Portfolios. This allows an early opportunity for implementing this recommendation.

- Recommendation 11: Invest in Shared Marketing.

The largest opportunity for shared marketing with this program is to promote the opportunity for program graduates to enter graduate school at one of Nevada's universities. The program is focused on providing a rigorous curriculum that provides a solid foundation for entering graduate school in a range of environmental-oriented options.

ii. Institutional mission and core themes

The College of Southern Nevada creates opportunities and enriches lives with inclusive learning and working environments that support diversity and student success. CSN fosters economic development, civic engagement, and cultural and scientific literacy, while helping students achieve their educational, professional, and personal goals.

CSN is committed to:

1. Exceptional Learning Environments that integrate career and science education to shape well-rounded, engaged citizens, employees, and community leaders.
2. Developing Solution-Oriented Strategies to help students overcome barriers to educational access and success.
3. A Culture of Accountability in which we balance data-informed decision making with flexibility and responsiveness to stakeholders, individuals, and events.

4. A Collegial Work Environment that makes CSN the "employer of choice" for an exceptional workforce that is engaged in and accountable for the quality of CSN's learning environment, and

that benefits from excellent support, growth opportunities, and competitive total compensation packages.

5. Quality Community Partnerships that provide resources and educational opportunities to develop a skilled workforce.

6. Cultural and Academic Initiatives that promote the advancement and appreciation of the arts, sciences, and humanities, contributing to the richness of our multicultural community.

CSN values the following:

Lifelong Learning: CSN values a broad-based education because a diverse foundation of knowledge empowers creative thinking, problem solving, and innovation.

Excellence: CSN understands that achieving and surpassing our goals requires care, commitment, and quality in teaching, learning, scholarship, service, and administration.

Integrity: CSN places fairness, honesty, transparency, and trust at the center of all policies and operations.

Inclusion: CSN embraces diversity because it heals social division and injustice, and promotes creativity, growth, and critical thinking through the integration of many different perspectives.

Academic Freedom: CSN values freedom of thought and speech because open minds and uninhibited discussions are fundamental to teaching, learning, and responsible civic engagement.

Connectedness: CSN builds a collective identity through shared governance, effective communication and collaboration among students, faculty, staff, and community members.

iii. Campus strategic plan and/or academic master plan

This BAS-EC is included in the 2021-2025 academic master plan for CSN.

iv. Other programs in the institution

The BAS-EC technician program provides an advanced educational opportunity, baccalaureate attainment, and seamless articulation for completers of the AAS-EM degree or those who have completed the prerequisite courses prior to application to the program. Adding the BAS-EC technician programming to the CSN curriculum availability of environmental conservation to existing programs provide a strong foundation that provides efficiencies that strengthen the entire department and program.

The BAS-EC technician program reflects the following components of its Mission Statement:

1. The program is specifically oriented to all students, including non-traditional and place-bound students.

2. Live student support services are available at CSN main campuses and at several of its annex sites.

- Courses in this baccalaureate program will be widely available across CSN using distance technologies where available

3. The program addresses the educational, cultural, and economic needs of non-traditional and place-bound students across Southern Nevada.

- There is no program currently focused in Environmental Conservation available to students in Southern Nevada

- The degree provides not only the opportunity for an education within the discipline of Environmental Conservation but also incorporates a strong base for experiential learning.

- Opportunities exist for program graduates in Nevada and beyond for employment. Many existing and future jobs require a basic knowledge of science and hands-on-training.

- The program is highly invested in scientific knowledge, experiential learning and critical analysis. Employment opportunities exist in the private and government sectors.

4. The program will collaborate with local and state-wide entities to identify needs for students who understand science and its application. These activities are continuously assessed to adapt to the rapidly changing needs of employers (see below) and to assist in the recruitment and economic development efforts of the state.

For example, this program has the support of the following private companies and government agencies (see attached letters): Shoshone Village, Western Technologies, United States Bureau of Land Management, United States Forest Service, Nevada Department of Wildlife, Department of Conservation and Natural Resources, SWCA Environmental Consultants, and Terracon.

v. Other related programs in the System

The BAS-EC is a technician (i.e. specialist) level degree that is not available at any other institutions within the Nevada System of Higher Education (NSHE).

E. Evaluation of need for the program

i. The need for the program and the data that provides evidence of that need

There are four (4) reasons this technician program is warranted at CSN:

1. This program is available to all students, including non-traditional and place-bound populations. According to research, non-traditional and place-bound students will be most impacted by the development of this degree program (1-2). Many of these students are part of the "Sandwich Generation," students who have primary caretaking responsibility for their own children and their aging parents (1-3). Among other factors, these responsibilities restrict their access to educational opportunities and advancement. CSN is uniquely situated to address the needs of these populations in Nevada.

CSN is a certified Hispanic Serving Institution (HSI) and addressing the needs of this population is one of its primary missions.

Sources

(1) Understanding Place-bound Students: Correlates and Consequences of Limited Educational Opportunities (Social Psychology of Education, 2004, 7(3):353–376)

(2) It's Not Enough to Get Through the Open Door: Inequalities by Social Background in Transfer from Community Colleges to Four-Year Colleges (Article · Mar 2006 · Teachers College Record).

(3) Extending Notions of Campus Climate and Diversity to Students' Transition to College. (Article Mar 2008 · The Review of Higher Education)

2. Faculty in the Biological Sciences Department were approached by representatives from local environmental firms with concerns about the lack of hands-on-training graduates have even after completing a standard degree. They expressed concern about the cost of training a recent graduate with little hands-on-training (experiential learning) and having to invest on the job training upwards of 2 to 5 years. Industry leaders requested that CSN create an Applied Science degree in the field of environmental Conservation to respond to their need. Consequently, the proposed BAS degree was created to meet the need in southern Nevada for technically-trained scientists. This degree will offer place-bound and nontraditional students educational advancement with job placement opportunities. It will also fill an identified job gap in the community (see attached letters of support).

Industry voiced that they cannot afford to hire an undertrained workforce in this new economy. This is a common issue across the nation for instance, Carol D'Amico stated that "We know from survey after survey that employers are expressing concern over the quality of college degrees and are becoming more reliant on credentials that they, themselves, sanction." (1) CSN is aware that knowledge and applied skills are being demanded by employers, consumers, and students. CSN is invested in making certain that skills learned in the classroom translate into skills for the workforce.

Many private companies and government agencies (see attached letters) are part of the Industry Advisory Committee and support the creation of this degree path at CSN (e.g. Shoshone Village, Western Technologies, United States Bureau of Land Management, United States Forest Service, Nevada Department of Wildlife, Department of Conservation and Natural Resources, SWCA Environmental Consultants, and Terracon).

Below are examples of comments of industry professionals regarding this proposed program :

Chris White, PE, Western Technologies

“We have found that universities and colleges across the United States continue to increase enrollments of science students however, they have little applied science training requiring firms to invest significantly in the early stages of their employment.”

Joseph Barnes, Nevada Department of Wildlife

"... the role that CSN plays in providing quality education to underserved, non-traditional, and place-bound students is in strong agreement with the goals and objectives found in the Fish and

Wildlife Relevancy Roadmap, which has been developed by the Associate of Fish and Wildlife Agencies...”

Donald P. Harper, Supervisory Geographic Info. Systems Specialist,
Bureau of Land Management

“The students that take this option will be learning in the Mojave and Great Basin ecosystems. This applied science background is a step up from out of state academic institutions offerings.”

Deborah J. Macneill, Area Manager, United States Forest Service

“In Southern Nevada, we have experienced challenges recruiting and hiring specialists from the local population with the training and qualifications we are looking for. I fully support your efforts to develop a Bachelor of Applied Science in Environmental Conservation program at the College of Southern. This program would help our community address the growing demand for environmental professionals in the workforce. ”

Susan Sorrells, Woner, Shoshone Village

"Young scientists who specialize in environmental conservation have been crucial to our success. If CSN created such a program it would make available endless possibilities including internships."

Source: (1) Exploring the Future of Community Colleges: A compilation of essays by contemporary leaders.

https://ferris.edu/HTMLS/administration/academicaffairs/extendedinternational/ccleadership/alliance/documents/ImagineMore_Exploring-the-Future-of-Community-Colleges_2014.pdf

3. According to the Nevada High Demand Occupation Analysis and United States Department of Labor, Bureau of Labor Statistics, data trends highlight the need for environmental expertise. Data suggest that the field is growing rapidly. Environmental related jobs in Nevada are expected to grow at a rate of 11%, consistent with national trends. In fact, the United States Department of Labor, Bureau of Labor Statistics reports that job growth is expected to exceed national averages in other fields.

"Employment of environmental ... specialists is projected to grow 11 percent from 2014 to 2024, faster than the average for all occupations. Heightened public interest in the hazards facing the environment, as well as the increasing demands placed on the environment by population growth, is expected to spur demand for environmental scientists and specialists."

Promotion from technician to specialist within an environmental specialty requires a baccalaureate degree. Educational opportunities are presently limited for non-traditional and place-bound students.

4. According to NSHE's publication "Expanding by Degrees NSHE's Role in Building a New Nevada," Nevada's college achievement rate is 27.5 percent for students by age 25. In 2012, 30.1 percent of Nevadans between the ages of 25 and 34 held an Associate's degree or higher, well below the national average of 41.1 percent.

According to the same publication, 58 percent of all jobs in Nevada will require a degree of post-secondary training by 2024, producing a huge gap in skills among workers. This gap in skills

must be closed if Nevada is to build a strong and diverse economy. This gap can be closed with this program as stated by industry partners.

“Public higher education is central to this statewide effort. Not only is a college degree the ticket to a better job, better pay, and long-term stability; it is the foundation for a stable, stronger and more diversified [Nevada] economy. If we are to build a New Nevada by expanding and diversifying our economy, it must be by degrees – more certificates, associate, baccalaureate, and advanced degrees that are closely aligned with our state’s economic development plan.”

According to NSHE, Nevada is “...committed to increas[ing] the number of students graduating with a degree or credential of value by 2020. In addition, Complete College America strongly emphasizes closing the attainment gap for historically underrepresented populations.” (1)

Studies have shown that between 2002 and 2012, NSHE's enrollment gap between Caucasian and minority students decreased from 39 % to 7 % (1). The number of degrees conferred during that time period to minority students system-wide increased by 171% (1). According to Expanding by Degrees NSHE’s Role in Building a New Nevada, "much has been accomplished, but there is much work left to do....." Consequently, they have launched a number of initiatives to help create diverse and inclusive policies, practices, and institutions.

NSHE recognizes that as one of the "least educated" states in the country, Nevada cannot continue to make strides "without significant investment." (1)

Therefore, the creation of a new technician level BAS in Environmental Conservation at CSN is a logical path to address the above goals of NSHE and the State of Nevada.

Source:

(1) Expanding by Degrees NSHE’s Role in Building a New Nevada, January 22, 2015. Nevada System of Higher Education. Accessed December 15, 2017. <https://nshe.nevada.edu/wp-content/uploads/Expanding-by-Degrees-NSHE-Strategic-Plan-2015.pdf>

ii. Student population to be served

This program is intended for all students. However, as previously outlined, it would specifically address the needs of underrepresented populations, including non-traditional and place-bound minority students.

iii. Procedures used in arriving at the decision to offer the program

Three (3) primary factors lead to this proposal:

1. According to research, non-traditional and place-bound students will be most impacted by the development of this degree program (1-3). It has been shown that non-traditional and place-bound students have a low rates of success and degree completion when they are required to transfer institutions (1-3). However, students who do not have to transfer institutions complete BAS degrees at a rate of 81% (2). The majority of students entering BAS programs are minority, place-bound and/or non-traditional students (3,4).

Also, according to Mary Fulton, such a program is "designed to expand access to low-income, first-generation or older students, many of whom may not have considered pursuing a bachelor’s degree...[it provides] flexibility [in] course schedules ... well-suited to ... life circumstances of

nontraditional students." She goes on to explain that "[such a program will] provide a seamless transition for students who start at a community college and therefore do not have to transfer to a four-year institution and a new setting." (5)

Sources

(1) Understanding Place-bound Students: Correlates and Consequences of Limited Educational Opportunities (Social Psychology of Education, 2004, 7(3):353–376)

(2) It's Not Enough to Get Through the Open Door: Inequalities by Social Background in Transfer from Community Colleges to Four-Year Colleges (Article · Mar 2006 · Teachers College Record).

(3) Extending Notions of Campus Climate and Diversity to Students' Transition to College. (Article Mar 2008 · The Review of Higher Education)

(4) Extending Notions of Campus Climate and Diversity to Students' Transition to College. (Article Mar 2008 · The Review of Higher Education)

(5) Community colleges expanded role into awarding bachelor's degrees. April, 2015. <https://files.eric.ed.gov/fulltext/ED556034.pdf>

2. Industry professionals have voiced concern about the cost of training a recent graduate with little hands-on-training (experiential learning) and having to invest on the job training upwards of 2 to 5 years (see attached letters). They stated that they cannot afford to hire an undertrained workforce in this new economy. CSN is aware that knowledge and applied skills are being demanded by employers, consumers, and students. CSN is invested in making certain that skills learned in the classroom translate into skills for the workforce.

3. Environmental related jobs in Nevada are expected to grow at a rate of 11% and job growth is expected to exceed national averages in other fields. Promotion from technician to specialist within an environmental specialties requires a baccalaureate degree.

iv. Organizational arrangements required within the institution to accommodate the program

This Program will be under the Department of Biological Sciences. The Biological Sciences program will remain as configured with a Director of the BAS-EC technician program appointed. Instructors for specific BAS-EC 300/400 level courses will be recommended by the Program Director and Faculty to the Department Chair(s).

Laboratory facilities for the BAS-EC technician program are located in the H and G buildings on the West Charleston campus, the main building of the North Las Vegas campus and the Henderson Campus. Classroom space is available on the West Charleston, Henderson, and North Las Vegas campuses for lecture courses. Existing classrooms and laboratory facilities have the most up-to-date instructional resources (i.e. classrooms, laboratory equipment) available.

The program will utilize current full-time faculty and resources to achieve program goals and course assignments. The upper division classes will utilize online resources and will include lecture, experiential learning, laboratory and classroom exercises, and other available techniques.

Full-time Biological Science faculty will teach in the BAS-EC technician program. The total faculty FTE is 1.6 FTE. Other specialized faculty from the Physical and Biological Science departments may also be utilized to teach specific courses covered in this program.

v. The timetable, with dates, for implementation steps

The first step (step one) of the BAS-EC technician program was the creation of the AAS-EM program; going live in Fall of 2019. The AAS-EM is the foundation for the first two years of the BAS-EC. The AAS was designed to have students complete all prerequisite courses before application to the BAS-EC technician program (step two). Courses have been selected, prepared and approved for the BAS-EC according to NSHE CCN guidelines. The design of steps one and two will lead to a higher than normal success rate of students in the BAS-EC program.

The proposed BAS-EC technician degree is planned to go live in Fall of 2022 with its first graduates in Spring 2024.

vi. If this or a similar program already exists within the System, what is the justification for this addition

The BAS-EC technician program is a specialist level degree that is not available within any other Nevada System of Higher Education (NSHE) institution.

vii. Evidence of employment opportunities for graduates (state and national). Include information on institutional review of the need for the program based on data from the Nevada P-20 Workforce Research Data System (<https://www.nevada.edu/ir/Page.php?p=workforce>), including the supply/demand reports at <http://npwr.nv.gov/reports/student-completion-and-workforce-part-ii/>.

This program is designed to lead to one of several potential career paths. These could include environmental careers in the public sector, biology, chemistry, geology and environmental scientist in the private sector, and pre-professional careers where graduate school follows completion of the BAS program.

As stated previously, careers in the sciences related to environmental skills are projected to grow 11% through 2024 according to the United States Department of Labor, Bureau of Labor Statistics (<https://www.bls.gov/ooh/life-physical-and-social-science/environmental-scientists-and-specialists.htm>). It is known that this field is one of the fastest growing occupations as evidenced by:

(1) All scientific specialties represented in this degree within Nevada are expected to grow at rates similar to the national average for all scientific occupations.

(2) A large portion of Nevada is public land managed by agencies of the federal government. In order for this land to be utilized for activities such as mining, water resources, ranching, and development, technical scientists will be needed for operations to interface with the managing agency. This often requires specific federal designations and qualifications that this degree

would provide. The best option for creating scientists for these positions is to educate place-bound and non-traditional students.

Students in this degree program will qualify for specialist level employment that specifically requires a BAS in a related science. It was identified as part of a review of student and employer needs. The review determined a need for trained environmental specialist degree.

Because the field is so diverse and fast moving, it is difficult to list all of the career options available to students with a BAS degree. Salaries and Career Outlook Overview according to the U.S. Department of Labor, Bureau of Labor Statistics:

Career	Mean Wage	Projected Growth
Biological Technician	\$45,860	5% growth (Faster than average)
Env. Sci. Tech.	\$71,360	8% growth (Much faster than average)

Source puller September 7, 2021: <https://www.bls.gov/ooh/life-physical-and-social-science/environmental-scientists-and-specialists.htm>

Salary and job examples from the Nevada Governor's Office of Science, Innovation and Technology position and wages are presented below:

Career	Mean Wage	Projected Growth
Biological Technician	\$90,376	26.5% growth, Much faster than average
Env. Sci. Tech.	\$60,902	

Source puller September 7, 2021: 1) <http://osit.nv.gov/>
2) [https://osit.nv.gov/uploadedFiles/ositnv.gov/Content/Reports/STEM%20Jobs%202019%20Final%20\(rev.1\).pdf](https://osit.nv.gov/uploadedFiles/ositnv.gov/Content/Reports/STEM%20Jobs%202019%20Final%20(rev.1).pdf)

A BAS-EC technician degree is extremely versatile and applied towards any organization where teams are assembled to handle unique, goal-specific projects. Positions can be found across the environmental industry however, education at the baccalaureate level is required.

4. The heads of several environmental firms suggested that CSN consider creating a Bachelor of Applied Science degree in the field of Environmental Conservation focusing in technical aspects of the fields (see attached letters). Employers expressed concerns for the lack of hands-on-training students have after completing a traditional Bachelor's degree. They explained that the cost of training a new graduate with little experiential learning was a significant investment of 2 to 5 years. Furthermore, many of their staff require a Bachelor's degree for promotion beyond that of a technician and therefore, become locked in their position when lacking that education.

Industry has made it clear that they can no longer afford an undertrained workforce in this new economy. CSN is aware that knowledge and applied ("hands-on") skills are being demanded by employers, end users, and students. Industry recognizes hands-on-skills learned at the baccalaureate level are a reality, a must, when considering new hires.

F. Detailed curriculum proposal

i. Representative course of study by year (options, courses to be used with/without modification; new courses to be developed)

See attached program guided pathway

ii. Program entrance requirements

Admission requires a completed AAS-EM degree or equivalent in courses meeting the AAS-EM requirements with an appropriate GPA (2.0 GPA in course work). This open-door policy is an effort to recruit all students including diverse populations of underserved communities.

Students interested in the BAS-EC technician program will be required to attend an orientation during spring semester prior to start of the fall semester. Topics covered in the orientation include: entry and admission processes, costs, financial aid, application deadlines, and relevant services available to students admitted into the program. For students not able to come to campus, a phone/Skype meeting will be arranged before the fall start date. All students will be advised by the Program Director(s) or faculty.

Specific Entry Process:

1. Full-time admissions in the Fall Semester.
2. Applications are due by end of April prior to Fall start; applications arriving later will be considered if space is available.
3. Students submit a resume and current college transcripts.
4. Applications will be reviewed to ensure that minimum requirements and prerequisites are met.
5. Two letters of recommendation are required (preferably from a previous instructor or employer)
6. Students will be notified of acceptance by the middle of June.
7. Start dates other than Fall will require program approval and are only recommended for part-time students.
8. Course sequencing and scheduling will be done in consultation with the BAS-EC Director and program faculty.
9. Students may enroll in individual classes outside of his/her student cohort, if they meet entry qualifications and space is available.

iii. Program completion requirements (credit hours, grade point average; subject matter distribution, preprogram requirements)

This program will be run with a cohort structure during the third and fourth years. Cohort learning is when a relatively small group of students (approx. 15 and 25) start and finish their degree program together. The learning will take place in a traditional and online format, or a hybrid of the two. Students will further benefit from the cohort structure as students typically hunger for the camaraderie that a cohort situation offers.

Some of the major benefits of cohort programs include:

1. Students know at the beginning of a program exactly when their program of study will end
2. Strong cohort programs will usually have strong cohort administrators. This is necessary in order to organize and keep everything on track as the students of that particular cohort move (hopefully seamlessly) through the program.
3. Students know when they will take classes, with whom. Cohort classes are usually pre-planned. No searching through registration booklets and websites trying to find the class that they need!
4. Cohort programs offer community building and collaboration opportunities.
5. Students build relationships with people who have similar goals.
6. Networking opportunities are created among students with similar goals.

Along with the “positives” of cohort programs there may be “negatives,” depending on how you view the situation, and your specific academic and lifestyle needs. These include:

- A pre-set list of classes, dates, times, and places. Cohort students proceed in lock-step with one another, which can be good for many, but if you fall out of step you risk your future in the entire program. With a cohort a student will still have the camaraderie even if they fall out of sync of the classes. We have designed this program so that students can pick up a class outside of the cohort so that they can still complete the program.
- A strong cohort administrator. Because this person’s main objective is to keep the cohort running smoothly, you will run up against opposition if you are in need of much (or any) flexibility during the cohort program.

A cohort program of study can be the best way to operate and complete a degree if the student requires definite parameters due to personal obligation.

This course has a total number of credits of 120; 60 credits during the AAS-EM degree portion and 60 credits during the BAS-EC technician degree portion. Students will be required to have an overall Grade Point Average (GPA) of 2.0 out of a 4.0 scale in course work.

See the AAS-EM and BAS-EC Guided Pathways for course distribution, subject matter and prerequisites.

iv. Accreditation consideration (organization (if any) which accredits program, requirements for accreditation, plan for attaining accreditation - include costs and time frame)

Due to the strong interdisciplinary and applied nature of the curriculum of the BAS-EC, there is currently no program specific accreditation that is appropriate.

v. For certificates only: Name of any state, national and/or industry recognized certification(s) or licensing examination(s) for which certificate prepares the student, if applicable

N/A

G. Institutional Review Process

i. Date of Faculty Review (may include additional information, as needed)

The CSN BAS-EC steering committee met on September 4, 2020 and by telephone on September 7, 2021, and approved courses and pathway. Courses were sent out through the CSN

curriculum system and emails to all registrars at other NSHE institutions for comments. There was no negative feedback from the other institutions concerning courses. Furthermore, the Deans' of Science at UNLV and UNR provided support letters (see attached) for programming as a good alternative for students who are not a good fit for traditional degree tracks. CSN leadership communicated with NSC Dean of Science (see attached) who provided a response of support for this effort. Finally, the CSN curriculum committee approved all courses created for the BAS-EC technician degree pathway for inclusion into the next catalog.

ii. Describe the process for review and approval by the appropriate academic policy body of the institution

The institutional review process is:

1. Faculty member creates and submits proposal.

2. Next, the Department Chair reviews proposals and recommends for approval. The Department Chair:

- a. Reviews resource requirements associated with curricular proposals.
- b. Evaluates curricular viability and integration with other programs.
- c. Determines relevance of the curricular proposal to the Academic Master Plan.
- d. Reviews outcomes for measurability and assessment. This includes, but is not limited to assessing and approving an included general course curriculum map; assessing and approving an included program outcome matrix; and assessing and approving an included three-year assessment plan.
- e. Reviews teach-out plans for degree and certificate deactivation proposals. If any outcomes or assessment measures change as a result of the teach-out plan, those items must be approved by the Office of Assessment.
- f. Reviews course syllabi to ensure they meet Faculty Senate syllabi policy requirements.

3. Registrar and Librarian review the proposal.

The Registrar:

- a. Checks for course number availability in MyCSN. Check the NSHE Common Course Numbering Database to make sure the correct number is being used.
- b. Determines the impact/effects that new, modified, or deactivated courses have on degrees.
- c. Checks for issues/concerns regarding course prerequisites including making sure these can be coded correctly in MyCSN.
- d. Maintains the consistency of catalog information.
- e. Checks for completeness and accuracy of forms including, but not limited to Common Course Numbering forms, Program Change/Deactivations forms, etc.

The Librarian:

- a. Reviews new curriculum proposals for resources needed via library support.
- b. Assesses the proposal to determine if the library currently has the resources needed to support the proposed course.
- c. Assesses the proposal to determine if the library will be able to acquire any other needed resources for the course.

d. If there is accreditation involved with the proposal, assesses if the library plays a role and if so, assesses if the library can fulfill the duties this role requires.

4. Next, the School Dean reviews proposals and recommends for approval.

The Dean:

- a. Reviews the resource requirements associated with curricular requests.
- b. Evaluates the curricular viability and integration with other programs.
- c. Determines the relevance of the curricular request to the Academic Master Plan.

5. Next, the School Curriculum Advisory Committee (SCAC) reviews and recommends for approval.

The SCAC:

- a. Receives initial curricular requests from faculty.
- b. Reviews the correctness of the request, including completion of appropriate forms, attachment of supporting/necessary documentation, and securing appropriate signatures.
- c. Strives for consistency and prevent unnecessary redundancies in the curriculum.
- d. Follows a majority vote rule to approve decisions in curriculum matters.
- e. Follows a set timeline in coordination with the FSCC.
- f. Returns incorrect or incomplete requests to initiating faculty members for revisions as needed.

6. Next, the Screening Committee (SC) reviews proposals and recommends for approval.

The SC:

- a. Reviews the requests forwarded by the SCACs for correctness and clarity, Common Course Numbering-related issues, transfer and articulation issues, counseling concerns, attachment of supporting/necessary documentation, and any other relevant issues and/or concerns.
- b. Forwards approved requests to the FSCC meeting.
- c. Returns incorrect or incomplete requests to initiating faculty members for revisions as needed.

7. Next, the Faculty Senate Curriculum Committee (FSCC) reviews proposals and recommends for approval.

The FSCC:

- a. Implements all current NSHE and college policies and procedures for the development and revision of courses, programs, and other elements of the curriculum.
- b. Receives and acts on curriculum and program requests submitted by the SCACs.
- c. Serves as the approval authority for the inclusion of current and new curricular information to the catalog.
- d. Strives for consistency and prevent/remove unnecessary redundancies in the curriculum.
- e. Assures that all components of the curriculum adhere to the standards and policies of the Nevada System of Higher Education (NSHE) and the Northwest Commission on Colleges and Universities.

8. Finally, the proposals recommended for approval are forwarded to CSN's Vice-President for Academic Affairs (VPAA) so they may complete the administrative portion of the curriculum approval process. The process may include approvals from the following groups depending on the nature of the proposal:

- a. an approval from CSN's Executive Leadership Team.
- b. an approval from NSHE's Council of Presidents (CoP).
- c. an approval from NSHE's Academic Affairs Council (AAC).
- d. an approval from NSHE's Academic, Research and Student Affairs Committee (ARSA) and Board of Regents (BoR).
- e. an approval from the Northwest Commission on Colleges and Universities (NWCCU).

H. Readiness to begin program

i. List the educational and professional qualifications of the faculty relative to their individual teaching assignments

The following full-time faculty will teach in the BAS-EC technician program:

Faculty 1, Ph.D., Dean, (0.1FTE), tenured.

Faculty 2, Ph.D., Director, Biology, (1.0 FTE), tenured.

Faculty 3, Ph.D., Biology, (0.1 FTE), tenured.

Faculty 4, PhD, Biology Chair, (0.1 FTE), tenured.

Faculty 5, PhD, Biology, (0.1 FTE), tenured.

Faculty 6, MS, Biology, (0.1 FTE), tenured.

Faculty 7, PhD, Biology, (0.1 FTE), tenured.

The total faculty FTE is 1.6 FTE.

Other specialized faculty from the Physical and Biological Science departments may also be utilized to teach specific courses covered in this program.

ii. List the anticipated sources or plans to secure qualified faculty and staff

Faculty used to teach courses that are part of this program will come from existing faculty in the School of Science and Mathematics. If part-time instructors (PTI) are required to teach a niche course, they will be recruited from industry or government. PTIs will be required to have the same level of education and experience as CSN faculty so that students are provided the highest level of education.

iii. Contribution of new program to department's existing programs (both graduate and undergraduate) and contribution to existing programs throughout the college or university

The BAS-EC technician program provides an advanced educational opportunity (e.g. baccalaureate attainment) with a seamless articulation for students who complete the AAS-EM degree or those who have all the prerequisite courses completed prior to application to the program.

Adding the BAS-EC technician program to the CSN curriculum combines the synergies of three different disciplines (biology, chemistry, and environmental science). These programs provide a strong foundation of efficiency that strengthen the entire college, department and this program.

This program will operate co-efficiently with the pre-existing AAS in Environmental Management, Department of Biological Science endorsement, offered at CSN, making use of existing courses for the first two years during the AAS-EM track, facilities and faculty.

The BAS-EC will also make use of AS degrees courses already offered at the college, increasing enrollments in the BAS-EC over time, which are offered by faculty from various programs and departments within the School of Sciences and Mathematics.

Finally, the program will collaborate with local and state-wide entities (e.g. private sector, mining, government) to identify needs for students who understand science and its application. These activities are continuously assessed to adapt to the rapidly changing needs of employers and recruitment and the economic development efforts of the State of Nevada.

iv. Recommendations from prior program review and/or accreditation review teams

The program was reviewed by numerous CSN faculty and industry professionals who all advocated for its development. Program review also recommended its development.

I. Resource Analysis

i. Proposed source of funds (enrollment-generated state funds, reallocation of existing funds, grants, other state funds)

The program will utilize existing funds. The upper division courses are low overhead and utilize existing full-time faculty. Income derived from tuition and fees is

ii. Each new program approved must be reviewed for adequate full-time equivalent (FTE) to support the program in the fifth year. Indicate if enrollments represent 1) students formally admitted to the program, 2) declared majors in the program, or 3) course enrollments in the program.

a. (1) Full-time equivalent (FTE) enrollment in the Fall semester of the first, third, and fifth year.

1st Fall semester 10.40

3rd Fall semester 21.67

5th Fall semester 24.27

(2) Explain the methodology/assumptions used in determining projected FTE figures.

Projections of FTE are based on estimated headcount enrollment discussed below. Entry into the BAS Environmental Conservation is limited to those students who have completed the CSN AAS Environmental Management degree or an equivalent degree from a regionally accredited institution. Additionally, the program will be capped at a maximum of 20 students per year who are admitted to complete this degree.

Assumptions include a 10% drop rate each year. The first 3 years of the program will ramp up to the maximum of 20 admitted students. In Fall 3, we show a decrease of 40% of the constant incoming students to represent completion. In subsequent fall semesters, that percent increases to 50% to represent students graduating on-time and those taking more than two years to graduate.

b. (1) Unduplicated headcount in the Fall semester of the first, third, and fifth year.

1st Fall semester 12

3rd Fall semester 25

5th Fall semester 28

(2) Explain the methodology/assumptions used in determining projected headcount figures.

As presented in section F.ii. above, students currently taking biology, chemistry, and environmental science classes at CSN were informally polled about their interest in enrolling in a program toward a BAS in Environmental Conservation from CSN. Of 765 students polled (unduplicated count), 239 responded “Yes,” they would be interested, 296 responded that they would possibly be interested, and 230 said they would not be interested.

If a third of those current CSN students responding “Yes” (239) to being interested in completing a BAS in Environmental Conservation technician program at CSN, this would indicate that at least 80 students per year would be interested in applying to the program. As stated above, with 296 students possibly interested in the BAS-EC program per semester, obtaining a conservative incoming class each fall semester of 20 is achievable.

Assumptions include a 10% drop rate each year. The first 3 years of the program will ramp up to the maximum of 20 admitted students. In Fall 3, we show a decrease of 40% of the constant incoming students to represent completion. In subsequent fall semesters, that percent increases to 50% to represent students graduating on-time and those taking more than two years to graduate.

iii. Budget Projections – Complete and attach the Five-Year Program Cost Estimate and Resource Requirements Table.

See attached

J. Facilities and equipment required

i. Existing facilities: type of space required, number of assignable square feet, space utilization assumptions, special requirements, modifications, effect on present programs

The lecture halls and laboratory facilities that will house the program are located on West Charleston and North Las Vegas campuses. These locations have the most up-to-date instructional resources (i.e. classrooms, laboratory equipment) available to instructors facilitating laboratory exercises.

ii. Additional facilities required: number of assignable square feet, description of space required, special requirements, time sequence assumed for securing required space

None required beyond existing facilities.

iii. Existing and additional equipment required

None required beyond existing equipment.

K. Describe the adequacy and availability of library and information resources

This was reviewed by the CSN Librarian as part of the process. Upon review, no additional resources are required from the Libraries as the current collections and services will support the needs of this program.

The CSN Libraries have a location at each of the main campuses, as well as an extensive online library, with staff available to provide instruction, support, resources and other services to all students.

CSN Library Services facilitate student success by fostering discovery and critical thinking through:

1. Exemplary instructional programs that support student learning, civic engagement, ethical use of information, and lifelong evidence-based decision making.
2. Providing equitable access to diverse viewpoints and quality resources.
3. Welcoming and highly qualified staff committed to supporting the needs of the CSN community.
4. Cross-departmental and community partnerships that enrich the College experience.
5. Positively impacting the student experience through innovative technology accessible within inclusive and engaging virtual and physical spaces.
6. Access through CSN and the NSHE system to a plethora of online systems (e.g. Sciencedirect) for journal articles, books, and research oriented materials.
7. Access to inter-library loans through the CSN library and NSHE system, making it easy for students and faculty to locate and use any resource required for teaching and learning.

As designed, the CSN library requires no additional materials to support this program at this time.

L. Student services

i. Describe the capacity of student support services to accommodate the program. Include a description of admissions, financial aid, advising, library, tutoring, and others specific to the program proposal

The College of Southern Nevada (CSN) has full capacity to support the BAS-EC technician degree program. We offer a wide variety of student support services designed to ensure our students have a successful experience and accomplish their educational goals. Programs such as those noted below are at the center of accommodating this degree program.

1) Admissions – CSN’s Admissions Office realizes that the admissions process can be very intimidating for many of our students, which is why we have knowledgeable staff who can address concerns and help students navigate the process. Some of the services provided are:

- Assisting future and returning students, international students, and gifted minor students with the admission process to address issues such as testing, residency requirements.
- Course Registration Information for in class and on-line courses.
- Cashier’s Office.
- Records and transcripts.

- Transfer information to CSN and other NSHE institution and transfer credit evaluation.
- Declaration of a Major.

2) Financial Aid - CSN understands that paying for a college education can be challenging for our students. Services and Information available for students include:

- Free Application for Federal Student Aid (FAFSA workshops on all of the main campuses to assist students and their parents with completing applications.
- Academic and CSN Scholarships.
- Federal Work Study Opportunities.
- Grants and Loans.
- Cost of Attendance.
- Dual and concurrent enrollment programs for qualified high school students that want to get a head start on their higher education.

3) Advising & Coaching Services - Our advisors/success coaches provide crucial assistance for new students who need help navigating the ins and outs of CSN. They can also help every student gain the skills needed to succeed in college. Specifically, the department provides the following:

- Academic advising and course planning for first-time college students, undecided students without a declared major and new and returning Associate of General Studies (AGS) Students.
- Skill-coaching in time management, self-advocacy, goal clarification, study skills and the development of personal plans for academic success.
- Clarification of institutional policies and procedures.
- Referrals to other campus resources.
- Student Orientation for Success (SOS).
- Online Advising Services (ACS Chat Room) and Email Communication.
- E-ALERT referrals from faculty.
- Coaching services.

4) Library Services - Facilitate student success by fostering discovery and critical thinking through:

- Exemplary instructional programs that support student learning, civic engagement, ethical use of information, and lifelong evidence-based decision making.
- Providing equitable access to diverse viewpoints and quality resources.
- Welcoming and highly qualified staff committed to supporting the needs of the CSN community. Library staff offers support for students completing research assignments and students can also complete an interactive introduction to a research tutorial. Additionally, students can bring their topic or assignment to one of the libraries for one-on-one assistance locating and citing quality information with a librarian.
- Cross-departmental and community partnerships that enrich the college experience.
- Positively impacting the student experience through innovative technology accessible within inclusive and engaging virtual and physical spaces.

5) Centers for Academic Success (Tutoring) –The goal of the Centers for Academic Success (CAS) is to provide quality academic assistance and support classroom instruction through several academic support services to foster students' overall academic success through:

- Math/Science resource center.

- Communication Center.
- Reading and Writing Center.
- Supplemental Instruction.
- One-on-One Tutoring.
- Center Tour, Class Visit, & Workshop Requests.
- Online Appointment Scheduler.

- Other Support Services.

6) Student Recruitment & College Connections – Consists of dedicated professionals who provide personal assistance to prospective and newly admitted CSN students throughout the entire college exploration, intake, admissions, and course registration process. In addition to working with traditional high schools, recruiters also work with local businesses, community groups, government agencies, and underserved populations to increase access to CSN's many educational and occupational opportunities.

7) Disability Resource Center (DRC) - The DRC makes every effort to ensure each CSN campus and learning center is fully accessible to students with disabilities. Our Disability Resource Center not only offers accommodations for students in need, but also gives them the opportunity to speak with one of our highly qualified disability specialists. A disability specialist will answer questions and make sure potential obstacles are addressed up front so nothing interferes with students' academic pursuits. DRC also offers adaptive equipment to those who qualify to ensure equal access to all CSN sponsored activities. Services include:

- Classroom Accommodations (Note Taking Assistance, Lab Assistant).
- Testing Accommodations (Extended Time, Reader, Scibe).
- Sign Language Interpreter.
- Alternative Text: (view more information below).
- Adaptive Equipment Loan.
- Adaptive Computer Lab.

8) Veterans Education and Transition Services (VETS) – The VETS Center works as a liaison between CSN students and the Department of Veterans Affairs to assist veterans and their dependents with their educational benefits and academic needs. The Center not only certifies enrollment, it provides timely and accurate information on VA related issues, as well as a place for our veteran students to socialize and study.

Student benefits for veterans include:

- Assistance with educational benefits application.
- CSN admission assistance.
- Liaison to veteran's regional office.
- Study location.
- Personal academic counseling.
- Information on local job opportunities.
- Veteran work-study possibilities.

i) ReEntry Program - Assists individuals with significant barriers to education and/or employment, including single parents, displaced homemakers, students with disabilities,

educationally disadvantaged students and individuals interested in nontraditional occupations (for their gender) in Career and Technical Education (CTE) fields.

j) TRIO Student Support Services Program – Is funded through a grant from the U.S. Department of Education to provide guidance, advocacy and academic support to low income, first generation and disabled students seeking to earn an associate’s degree and/or transfer to a four-year institution.

k) Child Care/Early Childhood Education (ECE) Lab - The ECE Lab offers programs for children age 6 months through 5 years and functions as a laboratory observation and practicum site for students studying early childhood education and related fields. ECE has served CSN for over 40 years providing:

- Hands-on, field based experiences in the ECE Lab Program.
- Model care and education programs for children ages 6 months through 5 years.
- Parent education and involvement programs.
- Community partnerships.

ii. Describe the implications of the program for services to the rest of the student body

The BAS-EC technician degree program will afford many non-traditional and place-bound CSN students to take courses exposing them to the Environmental Conservation field and producing a strong technical background in the sciences. Because it is a technical-generalist degree within the sciences, that focuses primarily on the understanding of our natural and man-made environments, students will complete specializations within the biological sciences. Many of these same courses can be used to fulfill other STEM degree program requirements.

If a student, for example, with an AS in Biological Science decides to pursue the BAS-EC technician degree, it would eliminate the need to repeat many of those courses. Students who already have an AAS in Environmental Management are also prime candidates for the BAS-EC. True to most science degrees, this program will require significant field work, lab work, hands on learning, and other data-oriented efforts outside of the classroom setting, which will benefit all students taking these courses, regardless of their declared STEM degree program.

M. Consultant Reports – If a consultant was hired to assist in the development of the program, please complete subsections A through C. A copy of the consultant’s final report must be on record at the requesting institution.

i. Names, qualifications and affiliations of consultant(s) used

N/A

ii. Consultant’s summary comments and recommendations

N/A

iii. Summary of proposer's response to consultants

N/A

N. Articulation Agreements

i. Articulation agreements were successfully completed with the following NSHE institutions. (Attach copies of agreements)

The program is self-articulating with the AAS-EM degree at CSN.

ii. Articulation agreements have not yet been established with the following NSHE institutions. (Indicate status)

The program is self-articulating with the AAS-EM degree at CSN.

iii. Articulation agreements are not applicable for the following institutions. (Indicate reasons)

The program is self-articulating with the AAS-EM degree at CSN.

O. Summary Statement

Faculty in the Biological Sciences Department were approached by industry representatives with concerns about the lack of hands-on-training graduates have even after completing a technician level bachelor's degree. They expressed concern about the cost of training a recent graduate with little hands-on-training (experiential learning), having to invest on the job training upwards of 2 to 4 years. According to the Nevada Department of Administration, the population in Nevada is expected to grow through 2029, and beyond, placing additional stress on environmental resources and increasing the demand for technically-trained scientists. Consequently, careers in the sciences related to environmental positions are projected to grow 11% through 2029. This program will provide a pathway for non-traditional and place-bound students to earn a baccalaureate degree in close proximity to their homes. This is important because, upon degree completion, these students will fill projected job gaps in Nevada and surrounding areas. Non-traditional and place-bound students are unlikely to pursue higher education unless it is in close proximity to their homes. CSN is in a unique position to provide this access to these students.

The proposed program meets the needs of under-represented members of our community and employers, as well as fills job gaps in the State of Nevada. Finally, this program has the support and backing from Shoshone Village, Western Technologies, United States Bureau of Land Management, United States Forest Service, Nevada Department of Wildlife, Nevada Department of Conservation and Natural Resources, SWCA Environmental Consultants, and Terracon.

NSHE Academic Program Proposal - Five-Year Program Cost Estimate and Resource Requirements

Enter N/A if the information is not applicable to the program proposal

Program Resource Requirements. Indicate all resources needed including the planned FTE enrollment, projected revenues, and estimated expenditures for the first, third and fifth fiscal years of the program. Include reallocation of existing personnel and resources and anticipated or requested new resources. Third and fifth year estimates should be in dollars adjusted for inflation. If the program is contract related, explain the fiscal sources and the year-to-year commitment from the contracting agency(ies) or party(ies). Note: This form reflects the NWCCU's Substantive Change Budget Worksheet as of 8/28/17.

College/University: College of Southern Nevada			Program: Environmental Conservation									
I. PLANNED STUDENT ENROLLMENT												
Note: Enrollment numbers (A + B) for each fiscal year should match the FTE/Headcount numbers in the Academic Program Proposal Form (Sect. I.ii.).	FY 1:		FY 23		FY 3:		FY 25		FY 5:		FY 27	
	FTE	Headcount	FTE	Headcount	FTE	Headcount	FTE	Headcount	FTE	Headcount	FTE	Headcount
	A. New enrollments to the Institution	10.40	12	21.67	25	24.27	28					
B. Enrollments from Existing Programs	0	0	0	0	0	0						
II. REVENUE												
	FY 1:		FY 23		FY 3:		FY 25		FY 5:		FY 27	
	On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time
1. New Appropriated Funding Request	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2. Institution Funds	\$0	\$27,596	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3. Federal (e.g. grant, appropriation)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4. New Tuition Revenues (registraration fee) from Increased Enrollments*	\$23,270	\$0	\$229,090	\$0	\$256,364	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5. Other Student Fees (associated with the program)*	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6. Other (i.e., Gifts)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Revenue	\$23,270	\$27,596	\$229,090	\$0	\$256,364	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Note: Total Revenue (Section I) should match Total Expenditures (Section III)												

NSHE Academic Program Proposal - Five-Year Program Cost Estimate and Resource Requirements

Enter N/A if the information is not applicable to the program proposal

III. EXPENDITURES		FY 1: FY 23		FY 3: FY 25		FY 5: FY 27	
		On-going	One-time	On-going	One-time	On-going	One-time
A. Personnel Costs							
1. FTE (Total FTE for all personnel types)		0.65	0	2.82	0	2.82	0
	Faculty	0.55	0	1.35	0	1.35	0
	Adjunct Faculty	0.00	0	1.27	0	1.27	0
	Grad Assts	0.00	0	0.00	0	0.00	0
	Research Personnel	0.00	0	0.00	0	0.00	0
	Directors/Administrators	0.00	0	0.00	0	0.00	0
	Administrative Support Personnel	0.10	0	0.20	0	0.20	0
	Other: _____	\$0	\$0	\$0	\$0	\$0	\$0
		Expenditures for personnel type below must reflect FTE levels in Section A.1.					
2. Faculty		\$13,575	\$18,600	\$78,975	\$0	\$78,975	\$0
3. Adjunct Faculty		\$0	\$0	\$35,159	\$0	\$35,159	\$0
4. Graduate Assistants		\$0	\$0	\$0	\$0	\$0	\$0
5. Research Personnel		\$0	\$0	\$0	\$0	\$0	\$0
6. Directors/Administrators		\$0	\$0	\$0	\$0	\$0	\$0
7. Administrative Support Personnel		\$5,029	\$0	\$10,058	\$0	\$10,058	\$0
8. Fringe Benefits		\$3,666	\$8,996	\$31,990	\$0	\$31,990	\$0
9. Other:		\$0	\$0	\$0	\$0	\$0	\$0
	Total Personnel Costs	\$22,270	\$27,596	\$156,182	\$0	\$156,182	\$0

NSHE Academic Program Proposal - Five-Year Program Cost Estimate and Resource Requirements

Enter N/A if the information is not applicable to the program proposal

		FY 1:	FY 23	FY 3:	FY 25	FY 5:	FY 27
		On-going	One-time	On-going	One-time	On-going	One-time
B. Operating Expenditures							
1. Travel		\$0	\$0	\$0	\$0	\$0	\$0
2. Professional Services		\$0	\$0	\$0	\$0	\$0	\$0
3. Other Services		\$0	\$0	\$0	\$0	\$0	\$0
4. Communications		\$0	\$0	\$0	\$0	\$0	\$0
5. Materials and Supplies		\$1,000	\$0	\$2,000	\$0	\$4,000	\$0
6. Rentals		\$0	\$0	\$0	\$0	\$0	\$0
7. Marketing materials and Advertising		\$0	\$0	\$0	\$0	\$0	\$0
8. Miscellaneous		\$0	\$0	\$70,908	\$0	\$96,182	\$0
Total Operating Expenditures		\$1,000	\$0	\$72,908	\$0	\$100,182	\$0

		FY 1:	FY 23	FY 3:	FY 25	FY 5:	FY 27
		On-going	One-time	On-going	One-time	On-going	One-time
C. Capital Outlay							
1. Library Resources		\$0	\$0	\$0	\$0	\$0	\$0

NSHE Academic Program Proposal - Five-Year Program Cost Estimate and Resource Requirements

Enter N/A if the information is not applicable to the program proposal

2. Equipment	\$0	\$0	\$0	\$0	\$0	\$0
Total Capital Outlay	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL EXPENDITURES (IIIA + IIIB + IIIC):						
	\$23,270	\$27,596	\$229,090	\$0	\$256,364	\$0
Note: Total Expenditures (Section IIIA-C total) should match Total Revenue (Section I)						

Budget Notes (optional):

College of Southern Nevada

An Analysis of the Feasibility on Offering Bachelor of Applied Sciences in Environmental Conservation

Authors: Dr. Douglas B Sims¹ and Dr. Mandy Bengtson²

¹ Dean, School of Science and Mathematics, College of Southern Nevada (O 702-651-3627)

² Regional Scientist, SWCA Environmental Consultants (M 702-575-3373)

Introduction

There is an increase demand to add technician level credentialed (i.e., degrees) academic programs due to industry needs. In today's knowledge intensive economy, technician level degrees represent the fastest growing portion of the workforce and has grown to a level that requires these technicians to support fully degreed professionals according to Spohrer & Maglio (2008) and Solnet (2012). Recently, there is a "call to action" focusing educational to add academic curriculum in areas related to hands-on-learning (Al-Badarneh, et al., 2013; Chesbrough, 2004). Technician level trained staff contribute more than 50% of the GDP economy according to Soubbotina & Sheram (2000) and, such trained staff are innovative and contribute to the success of underrepresented populations more than ever before.

These technician level degrees allow the fully trained scientist to focus on the bigger picture while the technician level task are accomplished. Now, technician level degrees are needed by hundreds of organizations across Nevada to move in a direction of success due to a massive shortage of personnel coming between now and 2029 according to the United States Bureau of Labor and Statistics (Spohrer & Maglio, 2010), and local industry leaders.

In a report published by the U.S. Department of Labor (Bureau of Labor Statistics, 2016) which introduces the employment figures in the United States shows the increase demand for the employment of people with hybrid (mixed) technician level skills is growing exponentially (Beblavý, et al., 2016; Thompson, et al., 2012).

In line with the demand for technician level scientists locally, CSN is positioned to take appropriate initiatives to provide these trained technicians with the knowledge and skills necessary to compete in the job market and to fill the coming gap. The purpose of this study is to present the feasibility of this programming in order to illustrate the importance, rationale, and objectives of initiating the new undergraduate curriculum, Bachelor of Applied Sciences in Environmental Conservation at CSN.

Background - *Environmental Conservation*

The Bachelor of Applied Sciences in Environmental Conservation (BAS-EC) technician program provides an advanced educational opportunity, baccalaureate attainment, and seamless articulation for completers of the Associates of Applied Science in Environmental Management (AAS-EM) degree or, those who have completed the prerequisite courses prior to application to the program. Adding the BAS-EC technician programming to the CSN curriculum availability to

existing programs provide a strong foundation which in turn provides efficiencies that strengthen the entire science department, program, while providing underrepresented students an education leading to gainful employment.

The program will collaborate with local and state-wide entities (public and private) to identify the needs for underrepresented students who understand science and its application at a highly trained technician level. These activities are continuously assessed to adapt to the rapidly changing needs of employers and to assist in the recruitment and economic development efforts of the state.

This program has the support of private industry and government agencies (see attached letters) such as Shoshone Village, Western Technologies, United States Bureau of Land Management, United States Forest Service, Nevada Department of Wildlife, Department of Conservation and Natural Resources, SWCA Environmental Consultants, and Terracon Consultants.

This program is available to all students, including non-traditional, place-bound populations, and underrepresented populations. According to research, non-traditional, place-bound, and underrepresented populations will be most impacted by the development of this BAS program (Kaikkonen, 2015). Many of these students are part of the "Sandwich Generation" who have primary caretaking responsibility for their own children, extended families, and their aging parents. Among other factors, these responsibilities restrict their access to educational opportunities and advancement. CSN is uniquely situated to address the needs of these populations in Nevada. Furthermore, CSN is a certified Hispanic Serving Institution (HIS) and addressing the needs of this population is one of our primary missions.

Faculty in the Department of Biological Sciences were approached by representatives from local environmental firms and agencies with concerns about the lack of technician level hands-on-training graduates. They expressed concern about the cost of training a recent graduate with little hands-on-training (experiential learning) and having to invest on-the-job training upwards of 2 to 5 years. Industry leaders requested that CSN create a Bachelor of Applied Science degree in the field of environmental conservation to respond to their need. Therefore, the proposed BAS degree was created to meet the need in southern Nevada for technician trained scientists. This degree will offer place-bound and nontraditional students educational advancement with job placement opportunities. It will also fill an identified job gap in the community as identified by industry input (see attached letters of support).

Industry voiced that they cannot afford to hire an undertrained technician workforce in this new economy. This is a common issue across the nation, for instance, Shields (2004) stated that "We know from survey after survey that employers are expressing concern over the quality of college degrees and are becoming more reliant on credentials that they, themselves, sanction". CSN is aware that knowledge and applied skills are being demanded by employers,

consumers, and students. CSN is invested in ensuring that skills learned in the classroom translate into skills for the workforce.

College of Southern Nevada in Academia

It is becoming a common target of many industry leaders for their technician level hires. Today, many 2 and 4-year institutions are moving in the direction of technician level credentials for training of industry connected workforce by offering professional level concentrations or degree programs containing courses related to the needs of industry (Dougherty et al., 2006; Locks et al., 2008; Fulton, 2015). For example, over two hundred universities in fifty countries have begun technician level academic programs to fill the need of industry (Teboul, 2006; Hefley, & Murphy, 2008; Fitzsimmons et al., 2014). These programs are not graduate school focused, rather, they are workforce focused, as requested by industry.

Justification of Establishing the BAS-EC Program

In today's knowledge-intensive economy, it is very important that companies, government agencies, and academic institutions are involved in formal education innovation; industry growth increasingly depends on it (Daniels, 2012; Witell et al. 2016). Academia needs to adopt and embrace services as a new discipline through adapting existing curricula and the offering of new dedicated technician level degree programs. Furthermore, people in the academic field along with industry need to play an active and productive role in initiating innovative partnership with businesses.

Here at CSN, it is in the best interest to understand, leverage, and adapt to the increasing importance of technician level trained specialists are needed in the business sector. It is not only the importance of the programming itself, but also it is vital to focus on technician level skills and to adopt it as a new discipline. This comes in line with the strategic objectives of the College of Southern Nevada, as presented below in its Mission Statement as well as that of the Nevada System of Higher Education (NSHE):

The **College of Southern Nevada** empowers our students and communities to achieve, succeed, and prosper.

The mission of ... **NSHE** is to provide higher education to the citizens of the state at an excellent level of quality consistent with the state's resources. It accomplishes this mission by acquiring, transmitting, and preserving knowledge throughout the region, nation, and world. The System provides an educated and technically skilled citizenry for public service, economic growth and the general welfare contributes to an educated and trained workforce for industry and commerce, facilitates the individual quest for personal fulfillment, and engages in research that advances both theory and practice.

Also, the research and development of this programming pointed out an industry-driven demand for the development of a technician level education. Such industry -driven need promotes a vital and vibrant academic-industry partnership. In this section, the justifications to establish the BAS-EC academic program are presented and discussed.

The Role of the BAS-EC Program

According to the Nevada High Demand Occupation Analysis and United States Department of Labor, Bureau of Labor Statistics highlight the need for environmental technician, data suggest that the field is growing rapidly. Environmental technician jobs in Nevada are expected to grow at a rate of 8-33%, consistent with national trends. In fact, the United States Department of Labor, Bureau of Labor Statistics reports that job growth is expected to exceed national averages in other fields.

According to the United States BLS employment of environmental specialists is projected to grow 11 percent from 2014 to 2029, faster than the average for all occupations. Heightened public interest in the hazards facing the environment, as well as the increasing demands placed on the environment by population growth, is expected to spur demand for environmental scientists and specialists.

According to NSHE's publication "Expanding by Degrees NSHE's Role in Building a New Nevada," Nevada's college achievement rate is 27.5 percent for students by age 25. In 2012, 30.1 percent of Nevadans between the ages of 25 and 34 held an Associate's degree or higher, well below the national average of 41.1 percent. Moreover, according to the same publication, 58 percent of all jobs in Nevada will require a degree of post-secondary training by 2024, producing a huge gap in skills among workers. This gap in skills must be closed if Nevada is to build a strong and diverse economy. This gap can be closed with this program as stated by industry partners:

"Public higher education is central to this statewide effort. Not only is a college degree the ticket to a better job, better pay, and long-term stability; it is the foundation for a stable, stronger and more diversified [Nevada] economy. If we are to build a New Nevada by expanding and diversifying our economy, it must be by degrees – more certificates, associate, baccalaureate, and advanced degrees that are closely aligned with our state's economic development plan."

As stated by NSHE, Nevada is "...committed to increase[ing] the number of students graduating with a degree or credential of value by 2020. In addition, Complete College America strongly emphasizes closing the attainment gap for historically underrepresented populations." Studies have shown that between 2002 and 2020, NSHE's enrollment gap between Caucasian and minority students decreased from 39 % to 7 %. The number of degrees conferred during that time period to minority students system-wide increased by 171%. According to Expanding by Degrees NSHE's Role in Building a New Nevada, "much has been accomplished, but there is

much work left to do...." Consequently, they have launched a number of initiatives to help create diverse and inclusive policies, practices, and institutions.

NSHE recognizes that as one of the "least educated" states in the country, Nevada cannot continue to make strides "without significant investment." Therefore, the creation of a new technician level BAS in Environmental Conservation at CSN is a logical path to address the above goals of NSHE and the State of Nevada.

Industry Support of the BAS-EC Program

Leaders from several environmental firms requested that CSN consider creating a Bachelor of Applied Science degree in the field of Environmental Conservation focusing on technical aspects of the fields (see attached letters). Employers expressed concerns for the lack of hands-on-training students have after completing a traditional bachelor's degree. They explained that the cost of training a new graduate with little experiential learning was a significant investment of 2 to 5 years. Furthermore, many of their staff require a bachelor degree for promotion beyond that of a technician to a senior technician therefore, become locked in their position when lacking that education.

Industry has made it clear that they can no longer afford an undertrained technician level workforce in this new economy. CSN is aware that knowledge and applied ("hands-on") skills are being demanded by employers, end users, and students. Industry recognizes hands-on-skills learned at the baccalaureate level are a reality, a must, when considering new hires. Below are comments of industry professionals regarding this proposed program:

Chris White, PE, Western Technologies

"We have found that universities and colleges across the United States continue to increase enrollments of science students however, they have little applied science training requiring firms to invest significantly in the early stages of their employment."

Joseph Barnes, Nevada Department of Wildlife

"... the role that CSN plays in providing quality education to underserved, non-traditional, and place-bound students is in strong agreement with the goals and objectives found in the Fish and Wildlife Relevancy Roadmap, which has been developed by the Associate of Fish and Wildlife Agencies..."

Donald P. Harper, Supervisory Geographic Info. Systems Specialist, Bureau of Land Management

"The students that take this option will be learning in the Mojave and Great Basin ecosystems. This applied science background is a step up from out of state academic institutions offerings. "

Deborah J. Macneill, Area Manager, United States Forest Service

"In Southern Nevada, we have experienced challenges recruiting and hiring specialists from the local population with the training and qualifications we are looking for. I fully support your efforts to develop a Bachelor of Applied Science in Environmental Conservation program at the College of Southern. This program would help our community address the growing demand for environmental professionals in the workforce."

Susan Sorrells, Woner, Shoshone Village

"Young scientists who specialize in environmental conservation have been crucial to our success. If CSN created such a program it would make available endless possibilities including internships."

The above industry leaders also expressed during meetings that there is a need to fill numerous technician level positions available today and, a high number of retirements coming over the next 3- to 5-years, leaving open and unfilled positions that organizations' will have to recruit from outside of Nevada. This is a common theme across multiple environmental industries in the state of Nevada.

Job growth and income ranges

Because the field is so diverse and fast moving, it is difficult to list all the career options available to students with a BAS degree. Salaries and Career Outlook Overview according to the U.S. Department of Labor, Bureau of Labor Statistics:

<u>Career</u>	<u>Mean Wage</u>	<u>Projected Growth</u>
Biological Technician	\$45,860	5% growth (Faster than average)
Env. Sci. Tech.	\$71,360	8% growth (Much faster than average)

Source: <https://www.bls.gov/ooh/life-physical-and-social-science/environmental-scientists-and-specialists.htm>

Salary and job examples from the Nevada Governor's Office of Science, Innovation and Technology position and wages are presented below:

Career	Mean Wage	Projected Growth
Biological Technician	\$90,376	26.5% growth, (Much faster than average)
Env. Sci. Tech.	\$60,902	8% growth (Much faster than average)

Sources: 1) <http://osit.nv.gov/>
2) [https://osit.nv.gov/uploadedFiles/ositnvgov/Content/Reports/STEM%20Jobs%202019%20Final%20\(rev.1\).pdf](https://osit.nv.gov/uploadedFiles/ositnvgov/Content/Reports/STEM%20Jobs%202019%20Final%20(rev.1).pdf)

Study Approach

This feasibility study utilized survey research conducted by the CSN Dean of the School of Science and Mathematics and Dr. Bengtson of SWCA, Inc., meetings with private environmental consulting firms, and college-industry collaboration. Also, letters of support were solicited from industry to show the need from their perspective of industry for this program (see appendix).

Data Collection, CSN student demand

A structured survey questionnaire was utilized and distributed over a representative sample of 408 CSN students. The response rate of students surveyed (97%) was a good proportion representing the total number of CSN students who would be interested in a technician level track. The following tables (1-2a and 2b) present the data collected from this survey covering interest, gender, and demographics of the survey population.

Table 1: General Survey Result

Answer Text	Respondents	Respondents
Environmental Conservation (EC)	113	28%
Environmental Laboratory Sciences (ELS)	80	20%
Neither of these 2 areas	199	49%
No Answer	16	3%

Table 2a: Gender based survey results

Gender	ELS	EC	Neither Program	No Response
Female	13.3%	20.1%	29.9%	2.5%
Male	6.4%	6.9%	14.7%	14.7%

Table 2b: Demographic based survey results

Race	ELS	EC
Asian	2.5%	4.4%
African American	0.7%	1.7%
Hispanic	9%	12%
Pacific Islander	0.2%	0.5%
Caucasian	4.4%	7.1%

Of the 408 students polled, 28% responded that they would be interested in earning a Bachelor of Applied Sciences in Environmental Conservation (BAS-EC), a technician level credential. Survey data showed that most of the students who responded are female and Hispanic students.

Industry Engagement

CSN staff were approached by local firms and agencies and asked to create technician level bachelor programs to fill the need for technician level positions (see appendix). These organizations are the Shoshone Village, Western Technologies, United States Bureau of Land Management, United States Forest Service, Nevada Department of Wildlife, Department of Conservation and Natural Resources, SWCA Environmental Consultants, and Terracon Consultants. All these industry partners requested that CSN create a bachelor degree technician level credential to support their need for open positions. Meetings were held with leaders from industry, CSN Dean of Science and Mathematics, Department Chair, and key faculty to discuss the needed curriculum to create successful field and laboratory technicians.

Conclusions

Many companies provided letter of support for the creation of this technician track and stated their support of this proposed BAS-EC program and that they will have more positions available than locals with the qualified skills. Companies were asked about their plans to employ new graduates, their plans to train them, and the availability of the training budget. Overwhelmingly, support showed an interest in hiring our graduates to fill technician level positions that they will all have going forward.

Of the students surveyed at CSN, 48% were interested in this option to earn a technician level degree. Data showed that 20.1% were female while 6.9% were male. Of these students, 12% were Hispanic females while 9% were Hispanic males. Overall, the BAS-EC pathway is of interest to the Hispanic student population with female students the primary audience for this program pathway.

In conclusion, this program is 100% student-focused, industry driven, and will provide all students but largely, underrepresented students the opportunity to:

- complete their educational goals;
- obtain gainful technician level employment;
- promote from technician to senior level technician;
- promote from senior level technician to Project Manager; and
- advancement in their personal and family life goals.

References

- Al-Badarneh, A., Spohrer, J., & Al-Duwairi, B. (2013). A model curriculum for undergraduate program in IT SSME. *International Journal of Service Science, Management, Engineering, and Technology*, 4, 1-18. <https://doi.org/10.4018/ijssmet.2013100101>
- Beblavý, M., Fabo, B., & Lenearts, K. (2016, December). Demand for Digital Skills in the US Labour Market: The IT Skills Pyramid. *Centre for European Policy Studies (CEPS) Catalogue, Special Report No. 154*.
- Bureau of Labor Statistics. (2016, December). *The Employment Situation* (USDL-17-0004). Washington, DC: US Department of Labor. Retrieved on January 6, 2017 from https://www.bls.gov/news.release/archives/empsit_01062017.pdf
- Chesbrough, H. (2004, September 24). A failing grade for innovation academy. *Financial Times*. Retrieved on August 1, 2016 from <http://www.ft.com>
- Daniels, P. W. (2012). Service industries at a crossroads: some fragile assumptions and future challenges. *The Service Industries Journal*, 32, 619-639. <https://doi.org/10.1080/02642069.2011.596536>
- Dougherty, Kevin J.; Kienzl, Gregory S., 2006. It's Not Enough to Get Through the Open Door: Inequalities by Social Background in Transfer from Community Colleges to Four-Year Colleges. *Teachers College Record*, v108 n3 p452-487
- Fitzsimmons, J. A., Fitzsimmons, M. J., & Bordoloi, S. (2014). *Service Management: Operations, Strategy, Information Technology* (8th ed.). Boston, MA: Mc Graw Hill.
- Fulton, M, 2015. Community colleges expanded role into awarding bachelor's degrees. <https://files.eric.ed.gov/fulltext/ED556034.pdf>
- Hefley, B., & Murphy, W. (Eds.) (2008). *Service Science, Management and Engineering: Education for the 21st Century Series*. New York, NY: Springer. <https://doi.org/10.1007/978-0-387-76578-5>
- Locks, AM, S Hurtado, N A. Bowman, L Oseguera, 2008. Extending Notions of Campus Climate and Diversity to Students' Transition to College . *The Review of Higher Education*. Volume 31, Number 3, pp. doi 257-285 10.1353/rhe.2008.0011
- Shields, N. (2004). Understanding place-bound students: Correlates and consequences of limited educational opportunities. *Social Psychology of Education: An International Journal*, 7(3), 353–376. <https://doi.org/10.1023/B:SPOE.0000037503.31317.5c>
- Solnet, D. (2012). Service management in hospitality education: Review and reflection. *Journal of Hospitality Marketing & Management*, 21, 184-214. <https://doi.org/10.1080/19368623.2011.584267>
- Soubbotina, T. P., & Sheram, K. A. (2000). Beyond Economic Growth: Meeting the Challenges of Global Development. *WBI Learning Resources*. Washington, DC: World Bank. © World Bank. <https://openknowledge.worldbank.org/handle/10986/15789> License: CC BY 3.0 IGO.
- Spohrer, J., & Kwan, S. K. (2009). Service science, management, engineering, and design (SSMED): An emerging discipline - outline & references. *International Journal of Information Systems in the Service Sector*, 1, 1-31. <https://doi.org/10.4018/jisss.2009070101>

- Spohrer, J., & Maglio, P. P. (2008). The emergence of service science: Toward systematic service innovations to accelerate co-creation of value. *Production and Operation Management*, 17, 1-9. <https://doi.org/10.3401/poms.1080.0027>
- Spohrer, J., & Maglio, P. P. (2010). Toward a Science of Service Systems. In Maglio, P., Kieliszewski, C., Spohrer, J. (eds), *Handbook of Service Science. Service Science: Research and Innovations in the Service Economy* (pp. 157-194). Springer, Boston, MA. https://doi.org/10.1007/978-1-4419-1628-0_9
- Spohrer, J., Maglio, P. P., Bailey, J., & Gruhl, D. (2007). Steps toward a science of service systems. *Computer*, 40, 71-77. <https://doi.org/10.1109/MC.2007.33>
- Teboul, J. (2006). *Service Is Front Stage: Positioning Services for Value Advantage*. Hampshire, England: Palgrave Macmillan. <https://doi.org/10.1057/9780230579477>
- Witell, L., Snyder, H., Gustafsson, A., Fombelle, P., & Kristensson, P. (2016). Defining service innovation: A review and synthesis, *Journal of Business Research*, 69, 2863-2872. <https://doi.org/10.1016/j.jbusres.2015.12.055>

Appendix

**College of Southern Nevada
Bachelor of Applied Science
Environmental Conservation
Three-Year Assessment PLAN**

Assessment Plan Submission Process

- All academic degree and certificate granting programs must submit a three-year assessment plan to the Department Chair and Academic Dean for review and approval by Oct 1 of Academic Year 1 in the assessment planning cycle designated for the academic school (see <https://www.csn.edu/assessment> for the timeline).
- All approved and signed three-year assessment plans should be forwarded from the Academic Dean's office to the Office of Assessment for final approval by October 12 of Academic Year 1.

Three Year Assessment Cycle: 2022-2025
Department: Department of Biological Sciences
Dated Completed: September 20, 2021
Completed By: Douglas Sims
Contact Email: douglas.sims@csn.edu
Contact Phone: 702-651-3627
Academic Program External Accrediting Organization: N/A
Year of Next Accreditation Review: N/A
Mission, Student Success, & Institutional Effectiveness
A Bachelor of Applied Science in Environmental Conservation program at CSN will provide a pathway for all students including non-traditional and place-bound students who typically require access to a baccalaureate program in proximity to their home. This program will allow those students to obtain a baccalaureate degree in this dynamic and demanding field to fill the projected employment opportunities in Nevada and the surrounding region. Furthermore, this program is needed because the Nevada population is expected to continue to grow. Such growth will place additional stress on environmental resources, which in turn increases demand for technically trained scientists in the environmental consulting field. Ultimately, this program will provide students with a mix of traditional learning techniques and experiential (hands-on) training with direct transfer to future employers. Program course work is diverse in drawing upon knowledge and skills from several disciplines.
Annual Assessment Review
Projected month of first annual assessment review will be May 2023.

Academic Year 1:
1. Program SLOs and Assessment Artifacts
<ol style="list-style-type: none"> 1. Summarize federal, county, state, and tribal policies driving natural resource policies. 2. Recall landscape ecology principles and technology to analyze ecological scenarios. 3. Recommend environmental techniques to develop management scenarios for working environmental conservation specialist. <p>Student achievement of the BAS Environmental Conservation program student learning outcomes are assessed in Capstone courses specific to federal, county, state, and tribal policies as they related to species and the wider environment.</p> <p>Capstone Courses: BIOL 341 Principles of Ecology BIOL 305 Introduction to Conservation Biology CHEM 220 Introductory Organic Chemistry</p> <p>Summative Assessment- Capstone Project Capstone project activity: Student must select a faculty advisor/mentor; Student must discuss with their faculty advisor a research project within the first month of the 3rd semester of the BAS program;</p>

Student must prepare a project plan, implement the plan, and evaluate the effectiveness and adequacy of the capstone project using best management practices (i.e. safety plan, sampling plan, laboratory or field plan, data review plan, final report); and
Presentation of project at a student poster session.

Assessment Measure:

An analytic rubric with 5 performance levels (Not Developed, Approaching Competence, Minimal Competence, Competence, Proficient) will be used to determine student achievement of the program SLOs as they pertain to their selected project concentration.

Performance Indicator:

Students must achieve a performance level of competence or higher in all rubric criteria.

2. Program Courses

NRES 410 Compliance with National Environmental Policy Act
NRES 310 Wildlife Ecology & Management

Academic Year 2:

1. Program SLOs and Assessment Artifacts

4. Analyze biological data to inform and make management decisions regarding environmental issues.
5. Categorize natural resource decision-making utilizing effective communication techniques.
6. Select Best Management Practice (BMP) and scientific strategies for managing natural resources..

Program SLOs assessed in Capstone courses. See Description of Capstone Project in AY1

2. Program Courses

BIOL 415 Evolution
BIOL 434 Mammalogy
BIOL 433 Ornithology
BIOL 432Herpetology
BIOL 492 Capstone Course

Academic Year 3:

1. Program SLOs and Assessment Artifacts

7. Assist in the preparation of Conservation Actions Plans (CAP), Biological Assessments (BA), Environmental Impact Statements (EIS), Informal Biological Assessments (IBA), and other efforts.
8. Show leadership skills within the environmental conservation and natural resource fields.

Program SLOs assessed in Capstone courses. See Description of Capstone Project in AY1

2. Program Courses

BIOL 492 Undergraduate Research.
BIOL300 Principles of Genetics
BIOL 331 Plant Taxonomy
BIOL 421 Conservation Biology

Review & Approve	Signature	Date
Program Director:	<i>Lois Merkler</i>	September 20, 2021
Department Chair:	<i>Matthew Mahrt</i>	September 20, 2021
Dean:	<i>Douglas B Sims</i>	September 20, 2021
Director- Office of Assessment:		

BAS-EC pathway

Fall Semester	Course	
CHEM 220	Introductory Organic Chemistry	4
BIOL 341	Principles of Ecology	3
BIOL 330	Plant Biology	3
ENV 345	Env. Regulations, History, Law and Methods	3
Spring Semester	Course	
BIOL300	Principles of Genetics	3
NRES 310	Wildlife Ecology & Management	3
BIOL 305	Introduction to Conservation Biology	3
BIOL 331	Plant Taxonomy	3
Summer Semester		
BIOL 400	Field School in Biology	4
Fall Semester	Course	
NRES 410	Compliance with National Environ. Policy Act	3
BIOL 415	Evolution	4
BIOL 434	Mammalogy	4
NRES 322	Soils	4
BIOL 492	Capstone course	2
Spring Semester	Course	
BIOL 421	Conservation Biology	3
BIOL 433	Ornithology	4
BIOL 432	Herpetology	4
BIOL 492	Capstone course	3

Capstone courses can be either a hands-on project within CSN or, a work-study in industry.

AAS-Environmental Management pathway (Active as of 20219)

First Semester	Requirement	Credit Hours	Term ²
ENG 100 or 101	English Composition I	3-5	
MATH 126 or higher	Mathematics ⁴	3	
Elective	Human relations	3	
COM 101	Communications	3	
ENV 101	Natural Science	3	
	Total	15-17	
Second semester	Requirement	Credit Hours	Term ²
MATH 127 or higher	Mathematics ⁴	3	
GEOL 101	Science	4	
ENG 102	Communications	3	
IS 100B or 101 ¹	Elective	0-3	
CHEM 121	Science	4	
	Total	14-17	
Third Semester	Requirement	Credit Hours	Term ²
CHEM 122	Science	4	
Elective	U.S. & NV Constitutions	4-6	
BIOL 196 or 190	Science	4	
Elective	Fine Arts/Human./Social Sci.	3	
	Total	15-17	
Fourth Semester	Requirement	Credit Hours	Term ²
NRES 210	Science	3	
PHYS 151 or higher	Science	4	
ENV 206	Science	3	
GIS 109 ¹ or, CEE 121 or, GEOL 220	Science (see note ³ below)	2-4	
BIOL 197 or 191	Science	4	
	Total	16	
	Degree Total	60-69	

Note:

1. Neither IS100B nor IS101 are required unless you take GIS109.
 2. Mark down the semester and grade in the column marked "Term" to track your progress.
 3. Recommend CEE 121 or GEOL 220.
- If you completed a higher MATH course, you do not need to take MATH 126 or 127; speak with the Program Director.

[EXTERNAL] Re: CSN BAS programming

Elizabeth Gunn <Elizabeth.Gunn@nsc.edu>

Tue 6/1/2021 10:33 AM

To: Sims, Douglas <Douglas.Sims@CSN.EDU>

Cc: Sims, Douglas <Douglas.Sims@CSN.EDU>; Mccoy, James <James.McCoy@csn.edu>; McLean, Sylvia <Sylvia.McLean@CSN.EDU>; Parker, Marilyn <marilyn.parker@csn.edu>

[External Email]

Hello Dr. Sims:

My apology for the delay in responding. We congratulate you on the work you and your colleagues have done to craft these degrees, and we look forward to collaborating with you. Please find below a few thoughts from our science faculty and administrators.

The primary points of feedback center on degree distinction and enrollment. Regarding the latter, our environmental science degrees are under enrolled, and while there is differentiation between the CSN and NSC degrees, it is reasonable to anticipate competition for enrollment. Thus, we want to ensure that students are aware of the differentiation and what that means for their career options.

- Our faculty would like to ensure that CSN students understand the implications for their future if they earn a BAS degree versus a BS degree. As is mentioned in the two-page proposals for the BAS Environmental Conservation and BAS Environmental Laboratory Sciences degrees, *“Upon completion, these students will fill projected technician level jobs in Nevada and surrounding areas”* and *“This programming is a non-calculus and non-graduate school track that is focused on technician level skills.”*
- It is our hope that this language is communicated to students well in advance of their admittance to any BAS program (current Environmental Management and upcoming Environmental Conservation and Environmental Laboratory Sciences degrees). Students may decide to transition from an AAS degree to a BAS degree without much thought to their future aspirations and some may be disappointed to realize a BAS degree does not transition to high-level career opportunities nor graduate school.
- Our NSC stakeholders would welcome the opportunity to speak with CSN Advising about methods for ensuring that NSC is well known at CSN as a transfer option as this relates to the distinction between our degree programs.

I wish you and your colleagues much success with these new programs.

Kind regards,
Elizabeth

Elizabeth Gunn, Ph.D.

Dean

SCHOOL OF LIBERAL ARTS & SCIENCES

She/Hers



From: Sims, Douglas <Douglas.Sims@CSN.EDU>
Date: Monday, April 12, 2021 at 9:50 AM
To: Elizabeth Gunn <Elizabeth.Gunn@nsc.edu>
Cc: Sims, Douglas <Douglas.Sims@CSN.EDU>, Mccoy, James <James.McCoy@csn.edu>, McLean, Sylvia <Sylvia.McLean@CSN.EDU>, Parker, Marilyn <marilyn.parker@csn.edu>
Subject: CSN BAS programming

Dr. Gunn:

I hope you are doing well and settling into your new role as Dean of NSC School of Liberal Arts and Sciences.

Attached are the overviews of the two programs we are looking to launch in Fall 2022.

1. Bachelor of Applied Science in Environmental Conservation
2. Bachelor of Applied Science in Environmental Laboratory Sciences

These two programs are technician level bachelor's degrees that will serve students who are not a good fit for a traditional calculus-based program. The highest math in these two programs is Pre-calculus I and II. We designed them to pull students from our exciting AAS-Environmental Management program and, they are both limited entry with a Fall semester start.

We worked with the science Dean's at UNLV and UNR on these programs to be a place for students who can't run the gauntlet of calculus courses required for a traditional research-grade degree. Therefore, these are technician level qualification and not a place for student with strong math skills; we direct students with strong math to either NSC or UNLV.

If you have any questions pertaining to the two programs attached, please let me know and I will be available.

Cheers,

Doug

Douglas B Sims, PhD
Dean, School of Science and Mathematics
Cc Professor

College of Southern Nevada
Henderson Campus

700 College Drive, HNC217

Henderson, NV 89002

T: 702-651-3627 / douglas.sims@csn.edu

"A winner is a dreamer who never gives up." *Nelson Mandela*

Administrative Assistant to the Dean

Ms. Marilyn Parker

Tel: 702-651-5040

E: marilyn.parker@csn.edu



*****Confidentiality Notice*****

This e-mail may contain information privileged or otherwise protected from disclosure. If you are not the intended recipient of this e-mail, do not duplicate or redistribute it by any means. Please delete it and any attachments and notify the sender that you have received it in error. Unintended recipients are prohibited from taking action on the basis of information in the e-mail.

Please consider the environment before printing.

[EXTERNAL] thanks - Re: CSN BAS Programming

Eric Chronister <eric.chronister@unlv.edu>

Wed 1/6/2021 3:55 PM

To: Sims, Douglas <Douglas.Sims@CSN.EDU>

[External Email]

Dear Doug,

I fully support the BAS degree options. They are great bachelor level career options for your students and may even be nice options for UNLV students for whom a BS degree proves not to be a good fit. The Director of the School of Life Sciences also replied that he "thinks it is great".

Best,
Eric

On 1/6/21 2:31 PM, Sims, Douglas wrote:

Hi Eric:

Attached is overview of our two planned BAS programs slated to start fall 2022. Let me know what you think.

If you like these programs, a letter of support from you, not UNLV< would be great.

Cheers,

Douglas B Sims, PhD
Dean, School of Science and Mathematics
Cc Professor

College of Southern Nevada
Henderson Campus
700 College Drive, HNC217
Henderson, NV 89002
T: 702-651-3627 / douglas.sims@csn.edu

"A winner is a dreamer who never gives up." **Nelson Mandela**

Administrative Assistant to the Dean
Ms. Marilyn Parker
Tel: 702-651-5040
E: marilyn.parker@csn.edu



*****Confidentiality Notice*****

This e-mail may contain information privileged or otherwise protected from disclosure. If you are not the intended recipient of this e-mail, do not duplicate or redistribute it by any means. Please delete it and any attachments and notify the sender that you have received it in error. Unintended recipients are prohibited from taking action on the basis of information in the e-mail.

Please consider the environment before printing.

--

Eric L. Chronister

Dean, College of Sciences

University of Nevada, Las Vegas,
4505 South Maryland Parkway,
Box 454001, Las Vegas, NV 89154-4001

P | [\(702\) 895-3487](tel:(702)895-3487)

F | [\(702\) 895-3455](tel:(702)895-3455)

E | eric.chronister@unlv.edu **W** | http://sciences.unlv.edu/?mc_phishing_protection_id=149734-bvr4s2ggmg9fseo5u0kg

UNLV | College of
SCIENCES

Dec. 18, 2020

Douglas B Sims, Ph.D.
Dean, School of Science and Mathematics
College of Southern Nevada
Henderson Campus
700 College Drive, HNC217
Henderson, NV 89002

Dear Dean Sims,

After reviewing your proposal to create two new undergraduate programs, Bachelor of Applied Science (BAS) – Environmental Conservation and Bachelor of Applied Science (BAS) – Environmental Laboratory Sciences, I feel both programs are a great addition to our degree offerings within the state of Nevada, and thus endorse the proposal wholeheartedly. I would also like to offer you and your faculty any assistance and help you may need from our end to make both programs a success.

In my personal judgment, both programs are needed to address the growing demand for environmental professionals in the workforce. The college of engineering at UNLV is proud of its nationally ranked environmental engineering program, and your students in the two said programs may take some useful courses and transfer them back to CSN to earn credits. Also our faculty may be solicited to assist your faculty and instructors to build/assess your curriculum and labs. I can sense there is a great potential that our expertise and resource can help you establish and grow these two new programs.

There is no doubt in my mind that this proposed program would have a positive, lasting impact on the community by filling a local, regional, and national need for trained professionals in the environmental fields. Due to its interdisciplinary nature and solid curriculum, job-seeking graduates could have great advantages for the marketability, and well on their way to build a successful career.

Overall, I believe this proposal is worthy of serious consideration, and recommend its development be coordinated with UNLV Engineering. Should you or any one has any questions, please contact me directly.

Yours,



Yingtao Jiang, Ph.D.

Associate Dean for Undergraduate Programs
Professor of Electrical and Computer Engineering
Howard R. Hughes College of Engineering
University of Nevada Las Vegas
Phone: 702-895-2533
Email: yingtao.jiang@unlv.edu

Susan Sorrells
P.O. Box 67
Shoshone, CA 92384

January 18, 2021

Dr. Lois Merkler
College of Southern Nevada
Dept of Biological Sciences, HN200C
700 College Dr
Henderson, NV 89002

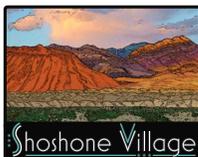
Re: Letter of Support for the Proposed BAS of Environmental Conservation at CSN

I would like to express my enthusiastic support for the creation of this new program at the College of Southern Nevada that would provide an education to students who want to go directly into the workforce and would assist governmental agencies, consulting firms, NGOs, and industry including small businesses in environmental conservation. My husband and I own such a small business that encompasses 2,000 acres of land on the edge of Death Valley called Shoshone Village. I am a fourth generation owner and have worked hard to conceive a business plan that honors the land yet is economically and environmentally sustainable. Our solution has been to create an eco village that is based on biodiversity and restoration of a desert ecosystem. As a result, we have enhanced our RV Park, Inn, Saloon, and Market and Gift Shop to host our guests, but we also have restored and interpreted our wild lands and wetlands. These natural areas are spectacular since there are many natural springs located there, and, in addition, the Amargosa River runs through it. As a result we have enhanced the habitat for migratory birds and have expanded the number of endangered species on our property. But we have taken a different approach since we have integrated the natural areas with the commercial areas so that the biodiversity includes people. We also have built birding trails and hiking trails so that the wild lands and the wetlands are accessible to our community and our visitors. As a result we also are economically sustainable since there is a great demand for the opportunity to interact and learn from nature.

We have been partnering with government agencies, universities, and NGOs to achieve and enhance our goals. Young scientists who specialize in environmental conservation have been crucial to our success. If CSN created such a program it would make available endless possibilities including internships. I sincerely hope that this new program comes to fruition.

With gratitude,

Susan Sorrells
Owner, CEO Shoshone Village





College of Science
University of Nevada, Reno

5 April 2021

Dean Douglas Sims
School of Science and Mathematics
College of Southern Nevada

Dear Dean Sims,

Thank you for meeting with me on March 30 to describe the new Bachelor of Applied Science (BAS) majors you are developing for students at the College of Southern Nevada. The BAS in Environmental Conservation and BAS in Environmental Laboratory Sciences build seamlessly on the Associate of Applied Science in Environmental Management you have already developed. These degrees will expand STEM workforce opportunities for students interested in technician-level careers. They are excellent options for students wishing to engage in the sciences from outside of the traditional Bachelor of Science track and the proposals have my strong support.

I enjoyed meeting you and hope that we will find ways to engage further in the future.

Sincerely,

Katherine R. McCall
Acting Dean, College of Science

University of Nevada, Reno/0424
Reno, Nevada 89557-0424
(775) 784-4591 office
(775) 784-4592 fax
<https://www.unr.edu/science>

To: College of Southern Nevada

From: Donald P. Harper

Supervisory Geographic Information Systems Specialist

Geospatial Manager

Nevada State Office

Bureau of Land Management

I am writing to express my support for the College of Southern Nevada development of a Bachelor of Applied Science in Environmental Conservation. I do not give this support as a representative of any federal agency but as a professional that has worked in the Natural Resource field for three different federal agencies in Nevada. I have been a Physical Scientist with the U.S. Geological Survey, a Geographer with the U.S. Fish & Wildlife Service and currently a Supervisory Geographic Information Systems Specialist with the U.S. Bureau of Land Management.

In performing all these positions, I have been in management roles that included the hiring process. In all cases of the hiring process, we look for practical experience when hiring at higher grades. When hiring I look for people with experience in applying science in a practical way and can adapt the science to solve practical problems. For entry level positions having a BAS vs a BS would not in my opinion be a deciding factor in the hiring process. We do look over their resume and transcripts for experience and academic achievement in the fields vital to the job in question. We look for candidates that have the knowledge to hit the ground running be it at the higher grades or entry level.

For the federal agencies in Nevada having an educational option in state to draw candidates from, build programs with and provide continuing learning to staff is a plus. The students that take this option will be learning in the Mojave and Great Basin ecosystems. This applied science background is a step up from out of state academic institutions offerings. There are many opportunities for internships within the federal agencies that can expand the educational experience for the students. This BAS in Environmental Conservation will be able to work closely with the Federal Agencies to build programs that benefit the students as well as the missions of the agencies. Continuing learning is an added benefit to federal staff working in Southern Nevada.

In summary I support the development of a Bachelor of Applied Science in Environmental Conservation at the College of Southern Nevada. With the added suggestion that all environmental/natural resource programs in the college require a intro to GIS component to provide the students with the tools necessary to meet mission goals.

Date: January 13, 2021

Dr. Lois F. Merkler
Department of Biological Sciences
College of Southern Nevada
700 College Drive, HN200C
Henderson, NV 89002

Dear Dr. Merkler:

I am writing to express my support of the College of Southern Nevada's proposed Bachelor of Applied Science in Environmental Conservation. The U.S. Forest Service is a multi-disciplinary agency specializing in natural resource management, shared stewardship, and public service. We employ scientists, recreation, fire and technical specialists, who work to preserve natural and cultural resources for tomorrow while enabling projects that benefit people today.

In Southern Nevada, we have experienced challenges recruiting and hiring specialists from the local population with the training and qualifications we are looking for. With Las Vegas having such a large culturally diverse population of future scientists and leaders, this four-year program would provide additional opportunities for local students interested in natural resources to stay local. Your program would provide an additional avenue to attract students to the Forest Service through the agency's Pathways program.

I fully support your efforts to develop a Bachelor of Applied Science in Environmental Conservation program at the College of Southern. This program would help our community address the growing demand for environmental professionals in the workforce. Due to its interdisciplinary nature and solid curriculum, job-seeking graduates would have great advantages for their marketability and be well on their way to building a successful career.

Sincerely,

DEBORAH J. MACNEILL
Area Manager





**Western
Technologies
Inc.**

Since 1955

6633 West Post Road
Las Vegas, Nevada 89118
(702) 798-8050 • fax 798-7664

December 8, 2020

Dr. Sims:

Thank you for speaking with me concerning the hiring practices of environmental and engineering firms. Western Technologies Inc. was established in 1955 and has specialized in environmental engineering and design, materials testing, special inspections and geotechnical engineering services across the Southwestern United States. We hire engineers, geologists, and environmental conservationist to staff our projects. Our firm has continued to have issues hiring properly trained and ready to work scientists.

We have found that universities and colleges across the United States continue to increase enrollments of science students however, they have little applied science training requiring firms to invest significantly in the early stages of their employment. It might be more beneficial and constructive to restructure academic training to reflect a more applied scientific program rather than theory. Most programs in the sciences are research-based by training students to critically evaluate questions in science and then learn to develop and carry out effective plans to answer those questions through research and analysis. I do feel that such training fosters qualities useful in and out of science. It however becomes difficult to hire a new graduate who has no knowledge in the practical side of what we do.

New hires with an applied science degree and some knowledge of what they are doing stand out among those with a standard degree. I think practical training is the key. In an applied program, it's not only knowledge, but knowledge embraced. We want to talk about what happens in the environmental setting, and we want an employee to be able to understand the basics of what is required in the work force rather than just the theory. That is more valuable to that organization.

Part of the role of a traditional bachelor's degree is to also prepare a student for an advanced degree such as a master's or PhD. While that is important, it takes away from the time and the ability to focus on practical application such as a BAS in Environmental Conservation.

You may contact me if you require additional clarification to this letter.

Sincerely,

WESTERN TECHNOLOGIES INC.

Christopher White, PE, CEM

Principal



STATE OF NEVADA

DEPARTMENT OF WILDLIFE

6980 Sierra Center Parkway, Suite 120

Reno, Nevada 89511

Phone (775)688-1500 • Fax (775)688-1595

TONY WASLEY
Director

BONNIE LONG
Deputy Director

JACK ROBB
Deputy Director

January 27th, 2021

Dr. Lois F. Merkle
Department of Biological Sciences, HN200C
College of Southern Nevada
700 College Drive
Henderson, NV 89002

Dear Dr. Merkle,

I am writing to express my wholehearted support for proposed Bachelor of Applied Science (BAS) degree at the College of Southern Nevada (CSN). Based on what I have seen in the proposed curriculum and program goals you provided, I believe students emerging with a BAS degree from CSN will be well suited to fill biological technician and entry level wildlife biologist roles in the various divisions within the Nevada Department of Wildlife (NDOW). As the wildlife management agency of Nevada, NDOW is responsible for managing and maintaining healthy populations of Nevada's wildlife, supporting and restoring quality natural habitat, and advocating for conservation of wildlife and ecosystem integrity in relation to land development plans. We also serve as a direct interface with a wide array of federal land management agencies, local governments, nongovernmental advocacy groups, private development entities, and the citizens of Nevada. Nevada is a state of extremes, with many wide open spaces stretched across vast distances of low density human habitation, and NDOW has found that bringing locally raised and educated wildlife and natural resource specialists into our workforce is one of the most effective ways we can further our mission to conserve Nevada's natural heritage and provide responsible management of the broad diversity of terrestrial and aquatic wildlife species in our state.

As the Statewide Staff Specialist within the Wildlife Diversity Division of NDOW, I have broad program oversight and project development responsibilities to help conserve the many terrestrial nongame species of wildlife across Nevada, and I am frequently in search of well qualified and enthusiastic entry level technicians and biologists. The proposed development of the BAS degree at CSN will help fill our personnel needs at NDOW in the short-term, and provide a steady stream of qualified applicants into the future. Furthermore, the role that CSN plays in providing quality education to underserved, non-traditional, and place-bound students is in strong agreement with the goals and objectives found in the Fish and Wildlife Relevancy Roadmap, which has been developed by the Associate of Fish and Wildlife Agencies – a broad consortium of state, federal, and private environmental entities. We at NDOW strive to follow the Relevancy Roadmap in our hiring policies in response to changing social, economic, and demographic conditions by providing opportunities for well-qualified individuals across all segments of society, with an emphasis on identifying and maintaining locals which otherwise might not find employment within the wildlife conservation community.

In summary, I fully support the development of a BAS degree at CSN and am very encouraged by this forward-thinking approach to provide opportunities to an often underserved segment of the population while providing tangible benefits to state and federal agencies, as well as other elements of wildlife and natural resource conservation in Nevada. Thank you for the opportunity to provide some perspective from my position at NDOW, and please feel free to follow up with anything else I can do to support your proposed BAS degree.

Sincerely,

A handwritten signature in blue ink, appearing to read "J.G. Barnes", with a long horizontal flourish extending to the right.

Joseph G. Barnes
Statewide Staff Specialist
Wildlife Diversity Division
Nevada Department of Wildlife



STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
NEVADA DIVISION OF FORESTRY
4747 Vegas Drive
Las Vegas, Nevada 89108
Phone (702) 486-5123 Fax (702) 486-5186

January 28, 2021

To: Dr. Lois Merkler & Dr. Douglas Sims
Department of Biological Sciences, HNC217B
College of Southern Nevada
700 College Drive
Henderson, NV 89002

Letter of Support
**College of Southern Nevada New Workforce Development Degree
Bachelor of Applied Science, emphasis in Environmental Conservation**

The Nevada Division of Forestry is pleased to express our support and interest in the College of Southern Nevada's proposed new degree program - Bachelor of Applied Science in Environmental Conservation (BASEC). As the premier state land management agency, we rely on an educated workforce with expertise and demonstrated experience in a wide variety of natural resource specialties. Our professional staff of foresters and conservation specialists are required to have a diverse background in natural resource management fields. These staff are trusted to make decisions for managing Nevada's forest, rangeland, and watershed resources based on their knowledge of vegetation, wildlife, and soil management; considering the complicated interactions among the environment and life dependent on it; and have a necessary understanding of laws that govern land management.

The program that the College of Southern Nevada has proposed will provide undergraduate students an introduction to a wide variety of conservation related topics in science and law that will provide a solid foundation that would serve as introductory level technician experience in core fields of study directly relevant (and often required) for many of our staff positions. We often struggle to find qualified applicants for our technical positions that are interested in living in and engaging with Nevada's rural landscapes. A degree program served through our premier community college would have a high likelihood of educating a workforce that knows and loves Nevada and is interested in working and residing in the state. A workforce with the skills this program would introduce them to would be excellent candidates for our agency's journey level positions.

Additionally, the Division also recognizes the merit of having an educated citizenry that is knowledgeable about and therefore better stewards of Nevada's natural resources. The merit of

that alone greatly benefits our state beyond institutions in need of staff with this educational background.

Therefore, we support and approve the formation of this new program of study, a Bachelor of Science with an emphasis in Environmental Conservation.

Thank you,

Cayenne Engel

Resource Management Officer

Department of Conservation and Natural Resources

Nevada Division of Forestry

4747 Vegas Drive

Las Vegas, NV 89108

cengel@forestry.nv.gov

(O) 702-486-5123 x228 (C) 702-683-0639



NEVADA DIVISION
OF FORESTRY



Nevada Department of
**CONSERVATION &
NATURAL RESOURCES**



ENVIRONMENTAL CONSULTANTS

Sound Science. Creative Solutions.®

1575 Delucchi Lane, Suite 223
Reno, Nevada 89502
Tel 775.686.6379
www.swca.com

January 8, 2021

Lois Merkler
Department of Biological Sciences, HN200C
College of Southern Nevada
700 College Drive
Henderson, NV 89002

Re: Bachelor of Applied Science Emphasis in Environmental Conservation

Dear Dr. Merkler:

I am writing to express my support of the College of Southern Nevada's proposed Bachelor of Applied Science Emphasis in Environmental Conservation. Since 1981, SWCA Environmental Consultants (SWCA) has specialized in providing comprehensive environmental planning, regulatory compliance, and natural and cultural resources management services to our private and public clients. With 37 offices located across the country, we employ scientists, planners, and technical specialists, who work to preserve natural and cultural resources for tomorrow while enabling projects that benefit people today.

Our well-trained and experienced staff are our most critical resource, as our clients rely on our specialists to develop creative solutions to their environmental compliance needs. We have experienced challenges hiring local staff with the background and qualifications we demand. Recent graduates often have a solid grasp of scientific theory, but they may lack a practical understanding of the regulatory context of our work and 'real world' applications. We commonly require that our new hires have on-the-job experience in the environmental field to ensure they have the knowledge and background needed to work for our firm. Moreover, those employees who are most successful and advance quickly at SWCA must also have well-honed writing, project management, oral communication, managerial, and organizational skills.

I fully support your efforts to develop the Bachelor of Applied Science Emphasis in Environmental Conservation program at the College of Southern Nevada. I believe that providing students with a solid understanding in both theoretical and applied ecological principals will allow them to be successful within the environmental industry and to make positive contributions in their chosen careers. SWCA is currently developing an internship program to recruit soon-to-be college graduates into our company, which will target underrepresented groups. Because the College of Southern Nevada is a minority-serving institution, the graduates of your proposed degree emphasis would be ideal candidates.

Please, let me know if I can provide any further assistance in your efforts to create this new degree program emphasis. Best of luck!

Sincerely,

A handwritten signature in black ink, appearing to read 'Mandy Bengtson'.

Mandy Bengtson, Ph.D.
Regional Scientist, Soil Ecologist

October 15, 2020

Douglas B Sims, PhD
Dean, School of Science and Mathematics
College of Southern Nevada
3200 E. Cheyenne Blvd, S121
North Las Vegas, NV 89030
Sort Code CYS121
T: 702-651-3627 / douglas.sims@csn.edu
C: 512-809-5094

Subject: Bachelor of Applied Science in Environmental Conservation

Dr. Sims:

Thank you for contacting me concerning the hiring practices of environmental and engineering firms. For the past 25 years, our firm has specialized in engineering, environmental sciences, and geotechnical services in Las Vegas. We routinely hire engineers, geologists, and environmental conservationist to staff our client's needs.

Our firm has encountered issues recruiting and hiring properly trained scientists who know and understand the career demands of consulting. I feel that a well-rounded academic obtained from a traditional degree is needed to prepare graduates for the rapidly changing job market. My own experience is that multiple career changes will be required of all those entering the work force today. A well-rounded education is often better training than specialized training to handle future career changes. Future employment tasks may bear little resemblance to an initial career choice.

However, traditional degree program graduates have little applied science training, requiring consulting firms to invest in extensive training after graduation. For those pursuing a career in consulting, it might be more beneficial to follow a degree program that includes applied scientific studies.

Training in topics such as technical writing, accounting, Environmental Species Act, project management, assessment, business development and communication, and environmental regulations are essential to those pursuing a career in consulting. Also, OSHA 10 and 40 Hour HAZWOPER training is a basic requirement for all who work in environmental consulting and introduces the basic concepts of workplace safety to new hires. These topics are often only briefly touched upon, if at all, in a traditional degree program, but are essential to those in this field.

One role of a traditional bachelor's degree is to prepare a student for an advanced degree such as a Master's or PhD. While that may be important to some, that may take time away from practical applications. Not everyone wants to go beyond a Bachelor's degree.



Bachelor of Applied Science Degree

October 15, 2020



Practical training and flexibility are keys for the consulting field. New hires with an applied science degree are going to stand out. Applied training is valuable to an organization.

Please note that the opinions expressed in this letter are my personal opinions based on my experience in environmental consulting. The opinions expressed here may not reflect the opinions of Terracon Consultants, Inc.

Sincerely,

Terracon Consultants, Inc.

A handwritten signature in blue ink, appearing to read "J. W. McGee". The signature is fluid and cursive.

Joseph W. McGee, P.G., C.E.M.
Senior Project Manager