



ACADEMIC PROGRAM PROPOSAL FORM

(Revised: January 2021)

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: Feb. 2, 2024

INSTITUTION: College of Southern Nevada

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

Date of AAC Approval:

02-28-24

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): Land Surveying and Geomatics

INCLUDED IN THE NSHE PLANNING REPORT: ☒ Yes ☐ No

(Website for NSHE Planning Reports: <https://nshe.nevada.edu/administration/academic-student-affairs/reporting/planning/>)

TOTAL NUMBER OF CREDITS TO PROGRAM COMPLETION: 120

PROPOSED SEMESTER/TERM OF IMPLEMENTATION: Fall 2024

Action requested (specify full program title):

Approval of a Bachelor of Applied Science (BAS) degree in Land Surveying and Geomatics 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 bachelor's

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 licensed Professional Land Surveyor (PLS) or, as a licensed PLS within this growing and demanding field. This BAS program will have a technician and PLS emphasis in Land Surveying and Geomatics (BAS-LSG) that will provide a distinctive baccalaureate degree pathway for students who attained any associate degree (e.g., AS, AA, AAS, etc.) with admission-required courses. This degree (BAS-LSG) will further the level credentials to a workforce development degree so that a graduate will be able to further their technician skills or obtain a profession license as a PLS.

This workforce development degree ("program") has the support and backing (see attached letters) from industry stakeholders such as Nevada Association of Land Surveyors (NALS), City of Henderson, Artesian Surveying Group, City of North Las Vegas, Diamondback Land Surveying, E.G. Radig, GCW Engineering and Surveyors, Heritage Surveying Nevada, Lumos & Associates, Nevada Depart. of Transportation, Odyssey Engineering, Wood Rogers & Associates, Dwyer Engineering, Las Vegas Valley Water District, and more.

The BAS-LSG pathway is designed to instill abilities and competence that focus on furthering the development of technician ("specialist") level skills and obtaining of the PLS license including communication, decision-making, industry experience, the transportation, mining, and housing development survey, and small project management with hands-on experience. The purpose of this BAS program is to build upon current vocational abilities while providing additional LSG 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 associate degree at CSN, a degree that contains appropriate lower division program requirements. Student learning will focus on specialist level survey skills with core knowledge in Land Surveying and Geomatics. It will produce trained LSG technicians and/or licensed PLS that can enter the work force in either the private or government sectors, filling empty and needed 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 field of LSG, students are focusing primarily on the understanding of transportation, mining, and housing development, and small project management with hands-on experience as a professional surveyor. As stated above, this BAS-LSG degree will draw from any field of study with a specialization in Land Surveying and Geomatics. 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 2029. This rapid growth will place additional stress on Land Surveying and Geomatics professionals, increasing the demand for technically trained scientists. The BAS-LSG 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 reasons, 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-LSG will have the following outcomes and should be able to:

1. Apply sound measurement methods, mathematics, science, and surveying techniques to collect, analyze, and edit spatial information in professional applications.
2. Analyze legal issues related to land surveying projects.
3. Apply fundamentals in project management to explain a geomatics project decision-making processes.
4. Summarize spatial information in graphical, textual, and verbal presentations as a collaborative team member.
5. Prepare to competently take the Fundamentals of Land Surveying examination developed by the National Council of Examiners for Engineering and Surveying (NCEES) to obtain a license as a Professional Land Surveyor.

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 / Strategic Goals

a. Access – *Increase participation in postsecondary education*

This new program will 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.

It will also increase the level of satisfaction with teaching, advising, and overall educational experiences at CSN and other NSHE institutions due to its learning by hands-on-activities. Moreover, 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.

b. Success – *Increase student success*

This program will increase the number of experiential and rich learning experiences available to all students, but particularly place-bound students through creative performance, scholarly and research collaboration with faculty, and through community service learning.

c. Close the Achievement Gap – *Close the achievement gap among underserved populations*

Underserved student populations who enter this program 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 LSG technician or professional program may find employment in a wide range of professions, ranging from industrial companies, governmental agencies, private consulting, and surveyor firms. Finally, higher education will be instrumental in advancing society's objectives and enriching the lives of Nevada's citizens.

d. Workforce – *Collaboratively address the challenges of the workforce and industry education needs of Nevada*

It is well known that innovative educational partnerships foster a life of learning across Nevada growing economy. This program (BAS LSG) is a response to a developing need of workforce and industry education in the area of land survey across the state of Nevada. Valuing community connections and our collaborative relationships with local engineering and survey business will guide our program offerings and ensures that we are addressing the needs of Nevada's workforce in survey. The educational pathways discussed in our proposal keep pace with evolving workforce needs and advances our communities by providing career opportunities for our students. This is in direct alignment with NSHE's "Workforce" goal.

e. Research – *Co-develop solutions to the critical issues facing 21st century Nevada and raise the overall research profile*

As a designated community college within the NSHE system, our faculty routinely participates in academic research typically associated with applied sciences. This research comes in the form of dynamic educational pathways formed and expanded in collaboration with education and industry partners, as well as analysis of institutional data to support initiatives best positioned to improve student success.

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-LSG is included in the 2021-2025 academic master plan for CSN.

iv. Other programs in the institution

The BAS-LSG program provides an advanced educational opportunity, baccalaureate attainment, and seamless articulation for completers of any associate degree degree with admission-required courses or those who have completed the prerequisite courses prior to application to the program. Adding the BAS-LSG programming to the CSN curriculum availability of land surveyor

programming to existing programs provide a strong foundation that provides efficiencies that strengthen the entire department and program.

The BAS-LSG 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 land survey and geomatics available to students in Southern Nevada
 - The degree provides not only the opportunity for an education within the discipline of land survey and geomatics 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 land survey with 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): Nevada Association of Land Surveyors (NALS), City of Henderson, Artesian Surveying Group, City of North Las Vegas, Diamondback Land Surveying, E.G. Radig, GCW Engineering and Surveyors, Heritage Surveying Nevada, Lumos & Associates, Nevada Depart. of Transportation, Odyssey Engineering, Wood Rogers & Associates, Dwyer Engineering, Las Vegas Valley Water District, and more.

v. Other related programs in the System

Great Basin College (GBC) offers a fully online version of this program in the Northern portion of the state. CSN will be offering an in-person program to serve the needs of our institution's service area. Students who learn more efficiently in the in-person environment will benefit from CSN's program however; students who learn efficiently in an online environment can be directed to the GBC program. Both programs must cover the same technical focus and prep for the same national licensure per the industry requirements.

vi. If the program was not included in the NSHE Planning Report, please explain why.

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

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 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

- i. Understanding Place-bound Students: Correlates and Consequences of Limited Educational Opportunities (Social Psychology of Education, 2004, 7(3):353–376).
 - ii. 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).
 - iii. Extending Notions of Campus Climate and Diversity to Students' Transition to College. (Article Mar 2008 · The Review of Higher Education)
2. Faculty in the Department of Physical Sciences were approached by representatives from local survey and engineering 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 LSG to respond to their need. Consequently, the proposed BAS degree was created to meet the need in southern Nevada for technically-trained surveyors. 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. Nevada Association of Land Surveyors (NALS), City of Henderson, Artesian Surveying Group, City of North Las Vegas, Diamondback Land Surveying, E.G. Radig, GCW Engineering and Surveyors, Heritage Surveying Nevada, Lumos & Associates, Nevada Depart. of Transportation, Odyssey Engineering, Wood Rogers & Associates, Dwyer Engineering, Las Vegas Valley Water District, and more).

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

Trent J. Keenan, PLS, President, Diamondback Land Surveying
"I am excited to learn of this potential program and am willing to support the establishment of a degree program in any way needed"

Thomas L. Hellums, PLS, Dwyer Engineering
"Currently, we are in need of an additional 1-2 qualified survey technicians and 1-2 Professional Land Surveyors."

Justin Wright, PLS, Principal land Surveyor, LVVWD
"Nevada, along with the rest of the country, is struggling with a shortage of qualified Land Surveyors."

Dennis W. Layton, PLS, President, Heritage Surveying Nevada, Inc.
"Currently, there is no program in Southern Nevada to help develop this much needed workforce"

Michael Kidd, PLS, City of Henderson
"The surveying community relies on educational programs to produce qualified and educated workers to fill both technical and professional positions in the industry... [and].... there is no program in Southern Nevada to help develop this much needed workforce. "

Justin Moore, PLS, President 2021, Nevada Association of land Surveyors (NALS)
"Nevada, along with the rest of the country is facing an impending public safety crisis. Currently, the average age of the Professional Land Surveyor in the United States is 61. Land Surveyors are retiring and leaving the workforce faster than the new generation is entering. Currently, the only program offered in Nevada is in Elko at Great Basin College. A program in Southern Nevada will help to infuse the state with qualified candidates."

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 suggests that the field is growing rapidly. Surveyor 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 is projected to grow 8 percent through 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[/development], is expected to spur demand for specialists."

Promotion from land surveyor technician to licensed PLS 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 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 LSG 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->

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 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. Land Surveying and Geomatics related jobs in Nevada are expected to grow at a rate of 8% and job growth is expected to exceed national averages in other fields. Promotion from technician to licensed PLS requires a baccalaureate degree.

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

This Program will be under the Department of Physical Sciences. The Physical Sciences program will remain as configured with a Director/Coordinator of the BAS-LSG program appointed. Instructors for specific BAS-LSG courses will be recommended by the Program Director/Coordinator, be currently a NV licensed Professional Land Surveyor (PLS), and report to the Department Chair(s).

Classroom and laboratory facilities for the BAS-LSG 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 two (2) current faculty and part-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.

v. The timetable, with dates, for implementation steps

The first step (step one) of the BAS-LSG program is the creation of the program; going live in Fall of 2024. The foundation for the first two years of the BAS-LSG will be any associate degree with MATH 127 or higher as the required math plus other admission-required courses. Several CSN associate degrees are designed to have students complete all prerequisite courses before application to the BAS-LSG program (step two). Courses have been selected, prepared and approved for the BAS-LSG 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-LSG program.

The proposed BAS-LSG degree is planned to go live in Fall of 2024 with its first graduates in Spring 2026.

vi. If this or a similar program already exists within the System, what is the justification for this addition? Please describe the nature and extent of the consultation with other institutions that have similar programs.

Great Basin College (GBC) offers the only program in the state from its main campus in northern Nevada. Moreover, there is no in person program within Clark County where there is a population of over 2.2 million. Due to there being an absence of a full Land Survey and Geomatics in person program, there is no place for interested students and therefore, they either have to relocate to another state where a in person program exist or, they do not enter this fast-growing field of surveying.

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 and/or any other applicable sources.

This program is designed to lead to career paths of career paths of land surveying and geomatics in licensed professional PLS careers where graduate school does not immediately follow completion of the BAS program.

As stated previously, careers in the sciences related to environmental skills are projected to grow 8% through 2029 according to the United States Department of Labor, Bureau of Labor Statistics ([https://www.bls.gov/oes/current/naics5.htm#19-0000%20%20-%20\(NAICS%20codes%20541380,%20621511,%206215121\)%202:%20](https://www.bls.gov/oes/current/naics5.htm#19-0000%20%20-%20(NAICS%20codes%20541380,%20621511,%206215121)%202:%20) and https://www.bls.gov/oes/current/oes_nv.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 a 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
Licensed Surveyors	\$78,290	8% growth (Faster than average)
Non-Licensed Surveying	\$55,130	8% growth (Much faster than average)

Source puller April 25, 2023: <https://www.bls.gov/ooh/architecture-and-engineering/surveyors.htm>

Salary and job examples from the Nevada Governor's Office of Science, Innovation and Technology position (classified as Civil Engineer) and wages are presented below:

Career	Mean Wage	Projected Growth
Licensed Surveyors	\$85,634	8% growth (Faster than average)

Source puller April 25, 2023:

1)[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)

A BAS-LSG 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 survey, environmental, and engineering firms however, education at the baccalaureate level is required.

4. The heads of several survey, environmental, and engineering firms suggested that CSN consider creating a Bachelor of Applied Science degree in the field of LSG 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's degree for promotion from technician to license PLS 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 an appropriate GPA (2.0 or higher) in course work required for entry. This open-door policy is an effort to recruit all students including diverse populations of underserved communities.

Students interested in the BAS-LSG 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 or remote online meeting will be arranged before the fall start date. All students will be advised by the Program Director(s)/Coordinator(s) or faculty.

Specific Entry Process:

1. Full-time admissions in the Fall Semester.
2. Interest letters 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 of MATH 127 or higher, PHYS 151 or higher, GIS 109.
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 May.
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-LSG Director and Department Chair.
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 all four years. However, students may be outside of their designated cohort due to life circumstances. 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 and with whom. Cohort classes are usually pre-planned, so students will not need to search through registration booklets and websites 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 a student's specific situation, 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; however, a student that falls out of step risks their 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, a person will run up against opposition if they 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 obligations.

This course has a total number of credits of 120 for the BAS-LSG program. 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 BAS-LSG 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-LSG, there is currently ABET accreditation under Surveying and Mapping, Accredited By: Applied and Natural Science Accreditation Commission, Program Criteria: Surveying and Geomatics. This accreditation process will be started upon approval of the program by the NSHE board.

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

Not applicable as this proposal is for a BAS not a certificate.

G. Method of Delivery (for the purpose of state authorization [NC-SARA])

i. How will this academic program be delivered when the program begins?

(mark all that apply)

- ☒ 100% face-to-face courses
☐ Hybrid (some online courses, some face-to-face courses)
☐ 100% online courses

ii. Learning Placements

Does the academic program have learning placements (e.g. internships, externships, clinical placements, student teaching, etc.) that *may take place outside the state of Nevada*?

- ☐ Yes
☒ No.

H. Institutional Review Process

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

The CSN BAS-LSG steering committee met on November 10, 2022, 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, NSC, GBC, TMCC, 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. Finally, the CSN curriculum committee approved all courses created for the BAS-LSG 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

Procedures and guidelines for submission and approval of curriculum proposals.

1. A faculty member initiates a curriculum proposal according to procedures detailed in college curriculum policy and in accordance with formal Board of Regents policies.
2. The launched proposal goes to the department chairperson, and all FSCC members including ex-officio members, and needs to include all required forms and supporting documents.
3. All members, including ex-officio members, should review the proposal and offer comments, as appropriate.
4. The department chair shall make a recommendation on the proposal in accordance with the Semester Curriculum Approval Timeline.
5. If recommended for approval by the department chairperson, the proposal moves to the School Curriculum Advisory Committee (SCAC) level. The recommendation of the department chair may be appealed using an Appeal Process described in policy.
6. Once proposals reach the SCAC level, the SCAC members (primarily faculty curriculum committee from the academic school, plus the school dean, an academic advisor, and an academic counselor) will review and vote upon the proposal in accordance with the Semester Curriculum Approval Timeline. The recommendation of the SCAC may be appealed using an Appeal Process outlined in policy. SCAC responsibilities include:
 - a. Review the correctness of the proposal, including completion of appropriate forms and the attachment of required/supporting documentation.
 - b. Strive for consistency and prevent unnecessary redundancies in the School curriculum.
 - c. Assess curriculum proposals for hidden prerequisites (see Appendix B).
 - d. Solicit for and receive feedback on curriculum proposals from the other SCACs and the College-at-Large. A ten-business-day period will be given for receipt of all feedback from both SCACs and the College-at-Large.
 - e. SCAC committees will notify the College-at-Large and other SCACs of available proposals to make comment on via the “all” email (SCAC Chairpersons should see

the Faculty Senate Chairperson to send “all” emails). SCAC committees will use a CSN LMS course shell to receive feedback.

- f. Follow a majority vote rule for decisions in curriculum matters.
 - g. Follow a set timeline in coordination with the FSCC.
 - h. Return incorrect or incomplete proposals to initiating faculty members for revisions as needed, especially if requested by SCAC ex-officio members.
 - i. Identify and include classification index program (CIP) code in consultation with Institutional Research (IR).
- 7. If recommended for approval by the SCAC, the SCAC chair will post proposals in the CSN Learning Management System (LMS) for feedback from other SCACs and the College-at-Large for 10 business days. The proposal moves to the FSCC level.
 - 8. The SCAC chair will summarize and present any feedback to the FSCC.
 - 9. Proposals at the FSCC level will either be recommended for approval, request changes, tabled, or rejected. Curriculum proposals recommended for approval will then move through the proper administrative approval process.
 - 10. If recommended for approval by the FSCC, the proposal moves to the Office of Curriculum, Scheduling, and Articulation for transmission to Vice-President for Academic Affairs (VPAA) within five (5) business days.
 - 11. Within thirty (30) calendar days of receipt of the proposal the VPAA shall make a written recommendation and submit it to the FSCC Chair. If the VPAA recommends approval, the proposal shall proceed as per Board of Regents and NWCCU guidelines in a timely fashion. If the VPAA does not recommend approval, the VPAA shall include the rationale for non-approval in the written recommendation.

I. Readiness to begin program

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

Full time faculty will be utilized who have a Professional Land Surveyor (PLS) License. Other specialized faculty from the Physical Science department and industry PLS 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, Engineering, 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-LSG program provides an advanced educational opportunity (e.g. baccalaureate attainment) with a seamless articulation for students who have all the prerequisite courses completed prior to application to the program.

Adding the BAS-LSG program to the CSN curriculum combines the synergies of three different disciplines (engineering, mathematics, physics, and 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 pre-existing students and associate degrees offered at CSN and outside of the institution.

The BAS-LSG will make use of associate degrees already offered at the college, increasing enrollments in the BAS-LSG over time, which are offered by faculty from various programs and departments within the School of Sciences, Engineering, 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 survey 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.

J. 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. Income derived from tuition and fees is sufficient to cover expenses.

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 22.53

5th Fall semester 33.80

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

FTE is calculated using the formula unduplicated headcount multiplied by the number of credits taken in a semester and then divided by 15. The average credits taken in a semester for this program is 13.

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

1st Fall semester 12

3rd Fall semester 26

5th Fall semester 39

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

Students currently taking courses in mathematics, physics, or engineering at CSN were informally polled about their interest in enrolling in a program toward a BAS-LSG from CSN. Of 189 students polled (unduplicated count), 51 (27%) responded "Yes," they would be interested, and 138 (73%) said they would not be interested.

If 27% of those current CSN students responding "Yes" (51) to being interested in completing a BAS-LSG program at CSN, this would indicate that at least at least 50 students per year would be interested in applying to the program. As stated above, with 51 students possibly interested in the BAS-LSG program per year, obtaining a conservative incoming class each fall semester of 20 is achievable.

CSN data tells us that 60% of students persist from the first year to the second year. That means 40% do not persist. We used the 40% to determine how many returning students we would lose from one fiscal year to the next. The rationale is that we can point to this number as "actual" data for why the percentage was chosen.

Additionally, we assume that the "returning students" all graduate at the end of their second year. So, we only used the new student number to calculate the returning students for each fiscal year.

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

See attached Cost Estimate Form.

K. 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.

L. 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.

M. 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-LSG 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.
9. 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.
10. 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.
11. 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-LSG degree program will afford many non-traditional and place-bound CSN students to take courses exposing them to the LSG 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 survey and engineering principles. Many of these same courses can be used to fulfill other STEM degree program requirements.

If a student, for example, with an associate degree in any other discipline with admission-required courses decides to pursue the BAS-LSG degree, it would eliminate the need to repeat many of those courses. True to most technical 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.

N. 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

No consultants were hired to assist in the development of the proposed program.

ii. Consultant's summary comments and recommendations

Not applicable.

iii. Summary of proposer's response to consultants

Not applicable.

O. Articulation Agreements

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

No articulation agreements were completed with NSHE institutions.

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

No articulation agreements have been established with NSU, UNLV, UNR, GBC, TMCC, and WNC. We may need to pursue a transfer agreement with GBC since they have a similar program.

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

Articulation agreements are not applicable for NSU, UNLV, UNR, TMCC, and WNC because they do not offer this program.

P. Summary Statement

Faculty in the Physical Sciences Department were approached by industry representatives with concerns about the lack of hands-on-training graduates have even after completing a professional 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 in on-the-job training for 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 surveyors. Consequently, careers in the sciences related to LSG are projected to grow 8% 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.

BAS-LSG Sample Pathway

Admission to BAS-LSG requires students to complete the following:

- Any associate degree from a regionally accredited institution;
- MATH 127 or higher (C or better);
- PHYS 151 or higher (C or better);
- GIS 109 (C or better);
- Or program director approval.

On the next pages are the pathways for:

- The first two years of associates-level coursework that meets the BAS-LSG admissions requirements with the achievement of the AAS Environmental Management credential.
- The last two years of the BAS-LSG to graduate.

BAS-LSG: Pre-Admissions (AAS Environmental Management)

Term/Course	Course Name	Credit Hours	Notes
Semester 1			
ENG 100 or 101	English Composition I	3-5	
MATH 126 or higher	Mathematics	3	
Elective	Human Relations	3	
COM 101	Communications	3	
ENV 101	Natural Science	3	
	Total Credit Hours	15-17	
Semester 2			
MATH 127 or higher	Mathematics	3	
GEOL 101	Pre-Admit Lower Division Elective	4	
ENG 102	Communications	3	
IS 100B or 101	Elective	0-3	
CHEM 121	Pre-Admit Lower Division Elective	4	
	Total Credit Hours	14-17	
Semester 3			
CHEM 122	Pre-Admit Lower Division Elective	4	
HIST 100 or PSC 101	U.S. & NV Constitutions	4	
BIOL 190	Pre-Admit Lower Division Elective	4	
Elective	Fine Arts/Human./Social Sci.	3	
	Total Credit Hours	15	
Semester 4			
NRES 210	Pre-Admit Lower Division Elective	3	
PHYS 151 or higher	Science	4	
ENV 206	Pre-Admit Lower Division Elective	3	
GIS 109	Elective	3	
BIOL 191	Pre-Admit Lower Division Elective	4	
	Total Credit Hours	17	

BAS-LSG: Post-Admissions

Term/Course	Course Name	Credit Hours	Notes
Semester 5			
CADD 100	Introduction to Computer Aided Drafting	3	
CEE 121	Introductory Surveying	2	
CEM 100	Fundamentals of Construction Management	3	
STAT 152	Introduction to Statistics	3	
SUR 280	Fundamentals of Geomatics I	4	
	Total Credit Hours	15	
Semester 6			
CADD 105	Intermediate Computer Aided Drafting	3	
CEM 250	Construction Materials and Methods	4	
SUR 281	Fundamentals of Geomatics II	4	
SUR 320	GIS for Surveyors	3	
SUR 360	Public Lands Survey System	3	
	Total Credit Hours	17	
Semester 7			
SUR 290	Introduction to Urban Development	4	
SUR 330	Introduction to Least Squares Adjustment	3	
SUR 340	Photogrammetry and Remote Sensing	3	
SUR 365	Land Descriptions	3	
SUR 495	Land Surveying Geomatics Capstone	3	Instructor approval (Note: Could be completed after Semester 6, including the summer.)
	Total Credit Hours	16	
Semester 8			
CADD 421	Advanced CAD for Land Surveyors	3	
SUR 440	Geodetic and GPS Surveying	3	
SUR 450	Construction Survey	3	
SUR 460	Advanced Boundary Analysis	3	
	Total Credit Hours	12	

Total Credits Post-Admission: 60

Program Resource Requirements. Indicate all resources needed including the planned FTE enrollment, projected revenues, and estimated expenditures for the first,
College/University: College of Southern Nevada **Program: Land Surveying and Geomatics**

I. PLANNED STUDENT ENROLLMENT			FY 1: FY 25		FY 3:		FY 27		FY 5:		FY 29	
			FTE	Headcount	FTE		Headcount		FTE		Headcount	
A. New enrollments to the Institution			10.40	12.00	22.53		26		33.80		39	
B. Enrollments from Existing Programs			-	-	-		-		-		-	
II. REVENUE			FY 1: FY 25		FY 3:		FY 27		FY 5:		FY 29	
			On-going	One-time	On-going		One-time		On-going		One-time	
1. New Appropriated Funding Request			-	-	-		-		-		-	
2. Institution Funds			-	35,705.00	-		1,000		-		-	
3. Federal (e.g. grant, appropriation)			-	-	-		-		-		-	
4. New Tuition Revenues (registration fee) from			18,828.00	-	102,840		-		154,242		-	
5. Other Student Fees (associated with the			-	-	-		-		-		-	
6. Other (i.e., Gifts)			-	-	-		-		-		-	
Total Revenue			18,828.00	35,705.00	102,840		1,000		154,242		-	
*revised May 2018												
III. EXPENDITURES			FY 1: FY 25		FY 3:		FY 27		FY 5:		FY 29	
			On-going	One-time	On-going		One-time		On-going		One-time	
A. Personnel Costs												
1. FTE (total FTE for all personnel types)			0.74	-	1.55		-		2.81		-	
Faculty			0.45	-	0.45		-		0.45		-	
Adjunct Faculty			0.29	-	1.10		-		2.36		-	
Grad Assts			-	-	-		-		-		-	
Research Personnel			-	-	-		-		-		-	
Directors/Administrators			-	-	-		-		-		-	
Administrative Support Personnel			-	-	-		-		-		-	
Other:			-	-	-		-		-		-	
			Expenditures for personnel type below must reflect FTE levels in Section A.1. above.									
2. Faculty			-	26,325.00	26,325		-		26,325		-	
3. Adjunct Faculty			8,071.00	-	30,479		-		65,513		-	
4. Graduate Assistants			-	-	-		-		-		-	
5. Research Personnel			-	-	-		-		-		-	
6. Directors/Administrators			-	-	-		-		-		-	
7. Administrative Support Personnel			-	-	-		-		-		-	
8. Fringe Benefits			3.00	8,134.00	8,143		-		8,154		-	
9. Other:			-	-	-		-		-		-	
Total Personnel Costs			8,074.00	34,459.00	64,947		-		99,992		-	

			FY 1: FY 25			FY 3:		FY 27		FY 5:		FY 29
			On-going	One-time		On-going		One-time		On-going		One-time
	B. Operating Expenditures											
	1. Travel		-	-		-		-		-		-
	2. Professional Services		-	-		-		-		-		-
	3. Other Services		754.00	246.00		1,000		-		-		-
	4. Communications		-	-		-		-		-		-
	5. Materials and Supplies		10,000.00	-		36,893		-		54,250		-
	6. Rentals		-	-		-		-		-		-
	7. Marketing materials and Advertising		-	1,000.00		-		1,000		-		-
	8. Miscellaneous		-	-		-		-		-		-
	Total Operating Expenditures		10,754.00	1,246.00		37,893		1,000		54,250		-

			FY 1: FY 25			FY 3:		FY 27		FY 5:		FY 29
			On-going	One-time		On-going		One-time		On-going		One-time
	C. Capital Outlay											
	1. Library Resources		-	-		-		-		-		-
	2. Equipment		-	-		-		-		-		-
	Total Capital Outlay		-	-		-		-		-		-
	TOTAL EXPENDITURES (III) +		18,828.00	35,705.00		102,840		1,000		154,242		-
			-	-	-	-	-	-	-	-	-	-



NEVADA ASSOCIATION OF LAND SURVEYORS

CENTRAL OFFICE: 526 SOUTH E STREET • SANTA ROSA, CA 95404
PHONE: (888) 994-3510 FAX: (707) 578-4406
nals@nvlandsurveyors.org

December 14, 2021

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

Dear Dr. Sims:

The Nevada Association of Land Surveyors (NALS) would like to offer our support in the development of a four-year degree in Land Surveying/Geomatics at the College of Southern Nevada (CSN).

Realizing the need to protect the public interests, many states, including Nevada, have enacted legislation requiring a four-year baccalaureate degree prior to licensure as a Professional Land Surveyor. In addition to NALS, the National Society of Professional Surveyors (NSPS), the National Council of Examiners for Engineering and Surveying (NCEES), and the Western Federation of Professional Surveyors (WFPS), have all adopted policies in support of a four-year degree requirement for licensure.

Nevada, along with the rest of the country is facing an impending public safety crisis. Currently, the average age of the Professional Land Surveyor in the United States is 61. Land Surveyors are retiring and leaving the workforce faster than the new generation is entering. The surveying community relies on educational programs to produce qualified and educated workers to fill both technical and professional positions in the industry. Currently, the only program offered in Nevada is in Elko at Great Basin College. A program in Southern Nevada will help to infuse the state with qualified candidates.

NALS works hard to support students. In addition to providing over \$15,000 in scholarships each year, NALS is dedicated to matching students with paid internships.

NALS is excited for this opportunity and will do whatever is necessary to help establish a degree program at CSN, including providing volunteers to serve on a technical advisory committee. Should you have any questions, or need any assistance, please feel free to reach out to our Executive Office at (888) 994-3510.

Sincerely,

A handwritten signature in blue ink, appearing to read "Justin Moore", is written over a light blue horizontal line.

Justin Moore, PLS
NALS President 2021



Patty Mamola, PE
Executive Director

Michael Kidd, PLS
Chairman (6/30/23)

Thomas Matter
Vice Chair (6/30/22)
Public Member

Karen D Purcell, PE
Past-Chairwoman (6/30/24)

Angelo A Spata, PE
Member (6/30/24)

L Brent Wright, PE/SE
Member (6/30/23)

Matt Gingerich, PLS
Member (6/30/22)

Lynnette R Russell, PE
Member (8/31/23)

Robert M Fyda, PE
Member (6/30/24)

Greg DeSart, PE
Member (6/30/24)

March 28, 2022

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

Dear Dr Sims:

The Nevada State Board of Professional Engineers and Land Surveyors writes in support of the College of Southern Nevada (CSN) development of a four-year degree in Land Surveying/Geomatics. State statutes require a four-year land surveying degree and currently the only program offered in Nevada is online through Great Basin College in Elko, Nevada.

Due to the evolution of technology used in land surveying, survey crews have been reduced to a single person. This eliminates oversight and opportunities for on-the-job training. Persons performing land surveying must understand the technology used in land surveying in addition to the legal principles and professional survey practices. Nevada must ensure adequate educational programs exist to produce technically proficient persons to provide competent land surveying services to the citizens of Nevada.

Currently Nevada's land surveyors are an aging population, 45% of all Nevada professional land surveyors are over 60 years old, of those surveyors that reside in Nevada, 70% are over 60 years old. In the next 15 years, as this aging population of land surveyors begin to retire, we could see a significant reduction in the number of land surveyors available to serve Nevadans. Instituting a program now at CSN provides the opportunity to stem the exodus of land surveyors and begin to grow the professionals that will be needed to fulfill the future demand.

With a significant population of community college students located in southern Nevada, CSN is uniquely positioned to provide Nevada with future land surveyors. In addition to CSN offering a four-year degree in land surveying, CSN also provides an opportunity for UNLV/UNR graduates, who started their education at CSN and took advantage of survey courses as free electives, to also be eligible to be licensed as professional land surveyors. Currently, there are no programs in southern Nevada to help develop this much needed workforce.

As the Nevada population continues to grow, infrastructure demands will dictate an increased number of Nevada land surveyors. We are hopeful this program will come to fruition. A land surveying program provides an excellent career path for those who choose to remain in the

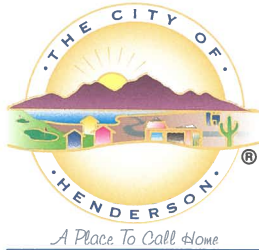
community college system and supports the growing needs of building and maintaining Nevada's infrastructure.

Please feel free to contact me for further assistance in supporting CSN's development of a four-year degree in Land Surveying/Geomatics.

Sincerely,



Patty Mamola, PE
Executive Director



CITY OF HENDERSON
240 S. Water Street
P.O. Box 95050
Henderson, NV 89009-5050

January 24, 2022

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

Dear Dr. Sims:

It has come to our attention that the College of Southern Nevada (CSN) is considering the development of a four-year degree in Land Surveying/Geomatics. I am the City Surveyor at the City of Henderson, and I can attest to the urgent need for this program.

Nevada, along with the rest of the country, is struggling with a shortage of qualified Land Surveyors, Right-of-Way acquisition staff and GIS geospatial staff. The surveying community relies on educational programs to produce qualified and educated workers to fill both technical and professional positions in the industry. Currently, there is no program in Southern Nevada to help develop this much needed workforce.

Currently, we have a staff of 18 covering land surveying, right-of-way acquisition, drafting and GIS/geospatial needs for the City's Public Works Department. We added a new position last year and may add another new position this year. Within our group of 18, there are 3 people that will be retiring in the next 3 to 5 years. I am certain that other land surveying firms have similar needs. The City of Henderson stands ready to assist CSN by providing a volunteer to serve on the Technical Advisory Committee and by providing paid internships to students enrolled in the program. We have been keeping 3 to 4 paid student interns with our group for the past 5 years.

I am excited to learn of this potential program and am willing to support the establishment of a full degree program or a minor in land surveying in any way possible. Please feel free to reach out to me at any time, Michael.kidd@cityofhenderson.com or 702-267-1307.

Sincerely,

Michael Kidd, PLS
City Surveyor

cc: Nevada Association of Land Surveyors

010

January 21, 2022

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

Re: Proposed Degree Program for Land Surveying/Geomatics

Dear Dr. Sims:

It has come to our attention that the College of Southern Nevada (CSN) is considering the development of a four-year degree in Land Surveying/Geomatics. I am a Senior Vice President and the Survey Director at GCW, Inc., an engineering and land surveying firm in Las Vegas. I can attest to the urgent need for this program.

Nevada, along with the rest of the country, is struggling with a shortage of qualified Land Surveyors. The surveying community relies on educational programs to produce qualified and educated workers to fill both technical and professional positions in the industry. Currently, there is no program in Southern Nevada to help develop this much needed workforce.

Currently, we are in need of additional qualified survey technicians and Professional Land Surveyors. I am certain that other land surveying firms have similar needs. GCW, Inc. stands ready to assist CSN by providing a volunteer to serve on the Technical Advisory Committee and by providing paid internships to students enrolled in the program.

I am excited to learn of this potential program and am willing to support the establishment of a degree program in any way needed. Please feel free to reach out to me at PBurn@GCWEngineering.com, (702) 804-2000.

Cordially,

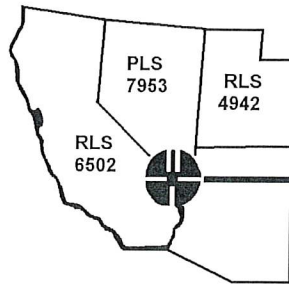
GCW, INC.



Paul Burn, P.L.S.
Senior Vice President
Survey Director

c: Nevada Association of Land Surveyors





E. G. RADIG, INC.

1577 FOOTHILL DR. SUITE #1
BOULDER CITY, NV 89005
(702) 293-3330 OFFICE
(702) 293-6153 FAX

January 21, 2022

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

Dear Dr. Sims:

It has come to our attention that the College of Southern Nevada (CSN) is considering the development of a four-year degree in Land Surveying/Geomatics. I am President at E.G. Radig inc, a land surveying firm in Boulder City. I can attest to the urgent need for this program.

Nevada, along with the rest of the country, is struggling with a shortage of qualified Land Surveyors. The surveying community relies on educational programs to produce qualified and educated workers to fill both technical and professional positions in the industry. Currently, there is no program in Southern Nevada to help develop this much needed workforce.

Currently, we need an additional 4 qualified survey technicians and 2 Professional Land Surveyors. I am certain that other land surveying firms have similar needs. E.G. Radig inc stands ready to assist CSN by providing a volunteer to serve on the Technical Advisory Committee and by providing paid internships to students enrolled in the program.

I am excited to learn of this potential program and am willing to support the establishment of a degree program in any way needed. Please feel free to reach out to me at 702-293-3330 and/or email to richard@egradig.com.

Sincerely,

Richard Ariotti, PLS
President

cc: Nevada Association of Land Surveyors



LEGAL
DESCRIPTIONS

December 14, 2021

SUBDIVISION
MAPPING

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

PARCEL MAPS

REVERSIONARY
MAPPING

Dear Dr. Sims:

RECORD OF
SURVEYS

It has come to our attention that the College of Southern Nevada (CSN) is considering the development of a four-year degree in Land Surveying/Geomatics. I am President at Diamondback Land Surveying, a land surveying firm in Las Vegas. I can attest to the urgent need for this program.

TOPOGRAPHIC
SURVEYS

ALTA SURVEYS

Nevada, along with the rest of the country, is struggling with a shortage of qualified Land Surveyors. The surveying community relies on educational programs to produce qualified and educated workers to fill both technical and professional positions in the industry. Currently, there is no program in Southern Nevada to help develop this much needed workforce.

GPS CONTROL
SURVEYS

WATER RIGHTS
SURVEYS

Currently, we are in need of an additional ten to fifteen qualified survey technicians and five to ten Professional Land Surveyors. I am certain that other land surveying firms have similar needs. Diamondback Land Surveying stands ready to assist CSN by providing a volunteer to serve on the Technical Advisory Committee and by providing paid internships to students enrolled in the program.

CADASTRAL
SURVEYS

CONSTRUCTION
STAKING

I am excited to learn of this potential program and am willing to support the establishment of a degree program in any way needed. Please feel free to reach out to me at 702.596.3257 or trent@dbackls.com

3D LASER
SCANNING

Sincerely,

A handwritten signature in blue ink, appearing to read 'Trent J. Keenan', with a stylized flourish at the end.

Trent J. Keenan, PLS, WRS, CFedS
President
Diamondback Land Surveying, LLC

cc: Nevada Association of Land Surveyors

Always do right. This will gratify some people & astonish the rest.
6140 Brent Thurman Way, Suite 230, Las Vegas, NV 89148
(o) 702.823.DBLS (f) 702.933.9030 (t) 888.594.DBLS
www.diamondbacklandsurveying.com

ARIZONA

CALIFORNIA

NEVADA

UTAH

WASHINGTON

January 24, 2022

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

Dear Dr. Sims:

It has come to our attention that the College of Southern Nevada (CSN) is considering the development of a four-year degree in Land Surveying/Geomatics. I am Gary Hancock at the City of North Las Vegas, a government entity in Las Vegas. I can attest to the urgent need for this program.

Nevada, along with the rest of the country, is struggling with a shortage of qualified Land Surveyors. The surveying community relies on educational programs to produce qualified and educated workers to fill both technical and professional positions in the industry. Currently, there is no program in Southern Nevada to help develop this much needed workforce.

Currently, we are in need of an additional four qualified survey technicians and two Professional Land Surveyors. I am certain that other land surveying firms have similar needs. The City of North Las Vegas stands ready to assist CSN by providing a volunteer to serve on the Technical Advisory Committee.

I am excited to learn of this potential program and am willing to support the establishment of a degree program in any way needed. Please feel free to reach out to me at (702) 633-1310 or email me at hancockg@cityofnorthlasvegas.com.

Sincerely,



Gary M. Hancock, PLS
City Surveyor
City of North Las Vegas

cc: Nevada Association of Land Surveyors



ARTISAN SURVEYING GROUP
"Where Art & Measurement Science Converge"
A Veteran-Owned Survey-Engineering & Geospatial Company

College of Southern Nevada – Henderson Campus
School of Science and Mathematics
700 College Drive, HNC217
Henderson, NV 89002

January 22, 2022

SUBJECT: Support for Geomatics Degree Program

Attn: Dr. Douglas B. Sims, Dean

With brevity we herein offer our support and extend encouragement for college's consideration of a Geomatics degree program (e.g., Associates and/or Baccalaureate). While the State's current sole baccalaureate program offers an excellent opportunity; it's remoteness to Southern Nevada likely comes at a significant level of promotion and selection expense for Southern Nevada student candidates.

The average age of a professionally licensed surveyor recently surpassed the age six decades. While there are many newer and exciting technological activities (e.g., multi-sensor UAV, GPS, virtual modeling, GPR, Hydrographic and Bathymetric modeling, etc.); if the spatial sciences profession is going to bridge the future, maintain competency, survive, and offer appeal to aspiring youth, its educational vantages must be accessible within population centers that can encourage and support the level of participation that is required.

Developing a program that meets the current and future desires and demands of employers and the public is critically essential. Not only will our firm contribute and promote academic participation; via invitation we can also serve as a resource for the School for academic steering as well as breadth and depth analysis. To the preceding end, please feel free to call upon the undersigned at (702) 233-3451 in the event that such participation is sought.

Thank you and respectfully,

Timothy J. Wolf, Managing Member

Support for Baccalaureate Program - CSN Henderson Campus

P.O. Box 33434, Las Vegas, NV 89133-3434
Office: (702) 233-3451
Page 1 of 1

Email: TWolf@ArtisanSurveying.com
www.ArtisanSurveying.com



January 24, 2022

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

Dear Dr. Sims:

It has come to our attention that the College of Southern Nevada (CSN) is considering the development of a four-year degree in Land Surveying/Geomatics. I am Michael Detwiler at Wood Rodgers, Inc. a land surveying firm in Reno and Las Vegas. I can attest to the urgent need for this program.

Nevada, along with the rest of the country, is struggling with a shortage of qualified Land Surveyors. The surveying community relies on educational programs to produce qualified and educated workers to fill both technical and professional positions in the industry. Currently, there is no program in Southern Nevada to help develop this much needed workforce.

Currently, we are in need of any additional qualified survey technicians and Professional Land Surveyors. I am certain that other land surveying firms have similar needs. Wood Rodgers stands ready to assist CSN by providing a volunteer to serve on the Technical Advisory Committee and by providing paid internships to students enrolled in the program.

I am excited to learn of this potential program and am willing to support the establishment of a degree program in any way needed. Please feel free to reach out to me at 775-828-5688, mdetwiler@woodrdgers.com.

Sincerely,

Michael G. Detwiler, PLS
Associate

cc: Nevada Association of Land Surveyors



**WALLACE MORRIS KLINE
SURVEYING, LLC.
LAND SURVEY CONSULTING**

**5740 S. ARVILLE ST. #206
LAS VEGAS, NEVADA 89118
ph:702.212.3967 fax:702.212.3963**

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

Dear Dr. Sims:

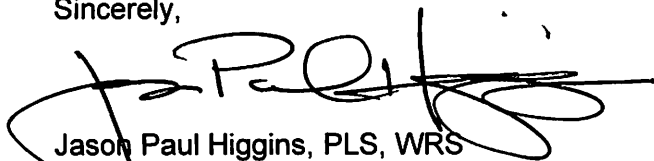
It has come to our attention that the College of Southern Nevada (CSN) is considering the development of a four-year degree in Land Surveying. I am a Principal with Wallace Morris Kline Surveying, LLC (WMK), a land surveying firm in Las Vegas. I can attest to the urgent need for this program.

The greater Las Vegas area, Nevada, and many parts of the U.S. are struggling with a shortage of qualified licensed land surveyors and land surveying technicians. The surveying community relies on educational programs to produce qualified and educated workers to fill both technical and professional positions in the industry. Currently, there is no program in Southern Nevada to help develop this much needed workforce.

We currently have a staff of almost 50. We anticipate some growth, together with replacing retiring individuals. Over the next several years, we will need 6-8 qualified survey technicians (both field and office positions) and 2-3 of Professional Land Surveyors. WMK will support CSN by offering a volunteer to serve on the Technical Advisory Committee and by considering paid internships to qualified students enrolled in the program. I would personally be interested in teaching some of the coursework.

We at WMK, are pleased to learn of this potential program and will look forward to opportunities to support it. Please feel free to contact me at 702-912-1124 or jhiggins@wmksurveying.com.

Sincerely,



Jason Paul Higgins, PLS, WRS
Principal

cc: Nevada Association of Land Surveyors

November 22, 2021

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

Dear Dr. Sims:

It has come to our attention that the College of Southern Nevada (CSN) is considering the development of a four-year degree in Land Surveying/Geomatics. I am President at VTN Nevada, a land surveying / engineering firm in Las Vegas, started in 1960. I can attest to the urgent need for this program.

Nevada, along with the rest of the country, is struggling with a shortage of qualified Land Surveyors. The surveying community relies on educational programs to produce qualified and educated workers to fill both technical and professional positions in the industry. Currently, there is no program in Southern Nevada to help develop this much needed workforce.

Currently, we need an additional 6 qualified survey technicians and 4 Professional Land Surveyors. I am certain that other land surveying firms have similar needs. VTN Nevada stands ready to assist CSN by providing a volunteer to serve on the Technical Advisory Committee and by providing paid internships to students enrolled in the program.

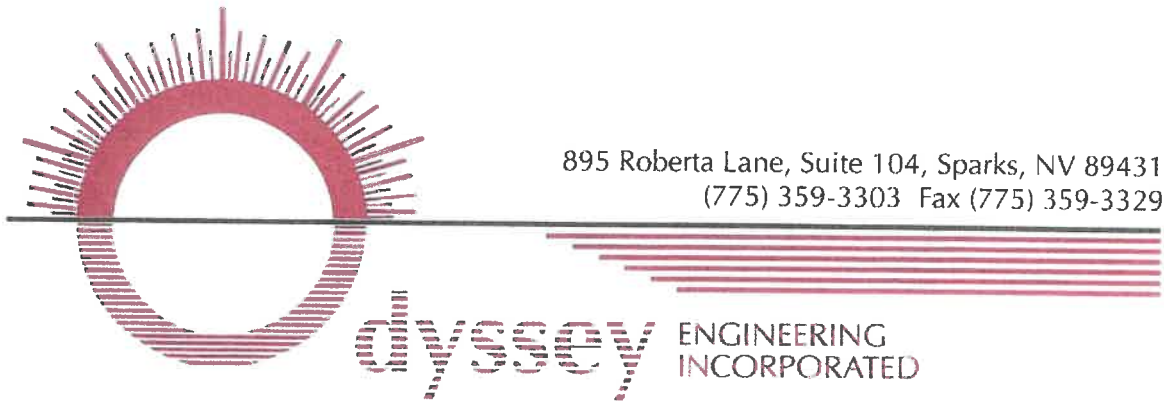
I am excited to learn of this potential program and am willing to support the establishment of a degree program in any way needed. Please feel free to reach out to me at 702-873-7550, genek@vtnnv.com

Sincerely,



Gene D Krametbauer, PLS
President

cc: Nevada Association of Land Surveyors



January 22, 2022

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

Dear Dr. Sims:

It has come to our attention that the College of Southern Nevada (CSN) is considering the development of a four-year degree in Land Surveying/Geomatics. I am a Project Manager at Odyssey Engineering, Inc., a civil engineering and land surveying firm in Reno. I can attest to the urgent need for this program.

Nevada, along with the rest of the country, is struggling with a shortage of qualified Land Surveyors. The surveying community relies on educational programs to produce qualified and educated workers to fill both technical and professional positions in the industry. Currently, there is no program in Southern Nevada to help develop this much needed workforce.

Currently, we are in need of an additional 3 qualified survey technicians and 2 Professional Land Surveyors. I am certain that other land surveying firms have similar needs. Odyssey Engineering, Inc. stands ready to assist CSN by providing a volunteer to serve on the Technical Advisory Committee and by providing paid internships to students enrolled in the program.

I am excited to learn of this potential program and am willing to support the establishment of a degree program in any way needed. Please feel free to reach out to me at 775-236-0543 or justin@odysseyreno.com.

Sincerely,

A handwritten signature in blue ink, appearing to read "Justin Moore", is written over a light blue circular stamp.

Justin Moore, PLS
Project Manager

cc: Nevada Association of Land Surveyors



STEVE SISOLAK
Governor

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

Right-of-Way Division
1263 S Stewart ST
Carson City, NV 89712

KRISTINA SWALLOW, P.E., *Director*
In Reply Refer to:

January 21, 2022

DOUGLAS B SIMS PHD
DEAN OF SCHOOL OF SCIENCE AND MATHEMATICS
COLLEGE OF SOUTHERN NEVADA
HENDERSON CAMPUS
700 COLLEGE DRIVE HNC217
HENDERSON NV 89002

Dear Dr. Sims:

It has come to my attention that the College of Southern Nevada (CSN) is considering the development of a four-year degree in Land Surveying/Geomatics. I am the acting Professional Land Surveyor with the Nevada Department of Transportation Right-of-Way Survey Services Division. I can attest to the urgent need for this program.

Nevada, along with the rest of the country, is struggling with a shortage of qualified Land Surveyors. The surveying community relies on educational programs to produce qualified and educated workers to fill both technical and professional positions in the industry. Currently, there is no program in Southern Nevada to help develop this much-needed workforce.

Currently, we are in need of an additional eight qualified survey technicians and two Professional Land Surveyors. I am certain that other land surveying firms have similar needs.

I am excited to learn of this potential program and am willing to support the establishment of a degree program in any way needed. Please feel free to reach out to me at: (775) 888-7470 or Gbigby@dot.nv.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Gregory A. Bigby".

Gregory A. Bigby, PLS
Manager II
NDOT Right-of-Way Survey Services

cc: Nevada Association of Land Surveyors



Carson City • Fallon • Lake Tahoe • Reno

www.LumosInc.com

Carson City
308 N. Curry Street, Suite 200
Carson City, Nevada 89703
775.883.7077

January 24, 2022

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

Dear Dr. Sims:

As Surveying Division Director for Lumos & Associates, a multi-discipline firm in Nevada, I am excited to hear that the College of Southern Nevada (CSN) is considering the development of a four-year degree in Land Surveying/Geomatics. I can attest to the urgent need for this program and the success in hiring local talent.

Nevada, along with the rest of the country, is struggling with a shortage of qualified Land Surveyors. The surveying community relies on educational programs to produce qualified and educated workers to fill both technical and professional positions in the industry. Currently, there is no program in Southern Nevada to help develop this much needed workforce.

The Surveying Division at Lumos & Associates is comprised 16 team members of which, seven are licensed Professional Land Surveyors, in Nevada. Our Senior Land Surveyors average 40 years of working industry experience. We understand the value in preparing new talent with the resources and technical skill set to work in this growing industry.

Lumos & Associates invests in educational programs and students through our paid internship program, funding scholarships and endowments, and being available to provide mentorship. For many years, our Engineering Division has benefited from the various engineering degree programs available, statewide. Uniquely, nearly half of our team members are graduates of the University of Nevada, Reno. In 2021, Lumos became a Corporate Sponsor for the College of Engineering and hired seven team members from the 11 paid internships.

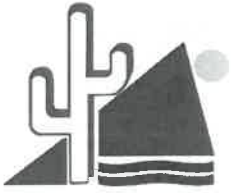
As we grow our company, I am excited to learn of this potential program and how we can contribute our technical expertise and time. We are willing to support the establishment of a degree program in any way needed. Please feel free to reach out to me at 775.827.6111 or gphillips@LumosInc.com.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Greg Phillips', is written over a blue ink stamp that also reads 'Greg Phillips'.

Greg Phillips, PLS, WRS
Director, Surveying Division

cc: Nevada Association of Land Surveyors



DWYER ENGINEERING, INC

CIVIL ENGINEERS, LAND SURVEYORS, WATER RIGHTS, LAND USE PLANNING

January 24, 2022

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

Dear Dr. Sims:

It has come to our attention that the College of Southern Nevada (CSN) is considering the development of a four-year degree in Land Surveying/Geomatics. I am Tom Hellums, at Dwyer Engineering, a land surveying firm in Las Vegas. I can attest to the urgent need for this program.

Nevada, along with the rest of the country, is struggling with a shortage of qualified Land Surveyors. The surveying community relies on educational programs to produce qualified and educated workers to fill both technical and professional positions in the industry. Currently, there is no program in Southern Nevada to help develop this much needed workforce.

Currently, we are in need of an additional 1-2 qualified survey technicians and 1-2 Professional Land Surveyors. I am certain that other land surveying firms have similar needs. Dwyer Engineering stands ready to assist CSN by providing a volunteer to serve on the Technical Advisory Committee and by providing paid internships to students enrolled in the program.

I am excited to learn of this potential program and am willing to support the establishment of a degree program in any way needed. Please feel free to reach out to me at 702-254-2200 or thellums@dwyerengineering.com

Sincerely,

Thomas L. Hellums, PLS, WRS
Dwyer Engineering
7310 Smoke Ranch Rd., Ste E
Las Vegas, NV 89128

cc: Nevada Association of Land Surveyors



CITY OF HENDERSON
240 Water Street
P.O. Box 95050
Henderson, NV 89009

January 25, 2022

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

Dear Dr. Sims:

It has come to our attention that the College of Southern Nevada (CSN) is considering the development of a four-year degree in Land Surveying/Geomatics. I am the Principal GIS Analyst for Public Works at the City of Henderson, and I can attest to the urgent need for this program.

Nevada, along with the rest of the country, is struggling with a shortage of qualified Land Surveyors, Right-of-Way acquisition staff, and Geospatial (GIS/CAD) staff. The surveying community relies on educational programs to produce qualified and educated workers to fill both technical and professional positions in the industry. Currently, there is no program in Southern Nevada to help develop this much needed workforce.

Currently, we have a staff of 5 supporting land surveying, right-of-way acquisition, and all other needs for the City's Public Works Department. Within our group of 5, there are 2 people that will be retiring in the next 3 to 5 years. I am certain that other land surveying firms have similar needs. The City of Henderson stands ready to assist CSN by providing a volunteer to serve on the Technical Advisory Committee and by providing paid internships to students enrolled in the program. We have been 2 paid interns with our group for the past 5 years.

I am excited to learn of this potential program and am willing to support the establishment of a full degree or minor program in Land Surveying/Geomatics in any way possible. Please feel free to reach out to me at any time, Catherine.hall@cityofhenderson.com or 702-267-3055.

Sincerely,

Catherine L. Hall
Principal GIS Analyst

cc: Nevada Association of Land Surveyors

December 14, 2021

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

Dear Dr. Sims:

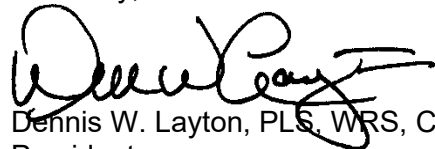
It has come to our attention that the College of Southern Nevada (CSN) is considering the development of a four-year degree in Land Surveying/Geomatics. I am President of Heritage Surveying Nevada, Inc., a land surveying firm in Las Vegas. I can attest to the urgent need for this program.

Nevada, along with the rest of the country, is struggling with a shortage of qualified Land Surveyors. The surveying community relies on educational programs to produce qualified and educated workers to fill both technical and professional positions in the industry. Currently, there is no program in Southern Nevada to help develop this much needed workforce.

Currently, we need an additional three qualified survey technicians and two additional Professional Land Surveyors. I am certain that other land surveying firms have similar needs. Heritage Surveying Nevada, Inc. stands ready to assist CSN by providing a volunteer to serve on the Technical Advisory Committee and by providing paid internships to students enrolled in the program.

I am excited to learn of this potential program and am willing to support the establishment of a degree program in any way needed. Please feel free to reach out to me at (702) 240-6901 or via email at dlayton@hsnvi.com.

Sincerely,



Dennis W. Layton, PLS, WRS, CFedS
President
Heritage Surveying Nevada, Inc.

cc: Nevada Association of Land Surveyors