ACADEMIC PROGRAM PROPOSAL FORM

(*Revised: October 2017*)

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

DATE SUBMITTED: May 17, 2019

INSTITUTION: UNR

Date of AAC Approval:
6/5/19

Date of Board Approval:

REQUEST TYPE:

- ☐ New Degree
- ☒ New Major or Primary Field of Study
- ☐ New Emphasis (BAS only)

DEGREE: Check applicable box

- ☐ Certificate: 30+ Credits
- ☐ Associate of Science (AS)
- ☐ Associate of Applied Science (AAS)
- ☐ Bachelor of Arts (BA)
- ☒ Master of Science (MS)
- ☐ Doctor of Philosophy (Ph.D.)
- ☐ Associate of Arts (AA)
- ☐ AA/AS
- ☐ Bachelor of Applied Science (BAS)
- ☐ Bachelor of Science (BS)
- ☐ Master of Arts (MA)
- ☐ (Other or Named Degree)

MAJOR OR PRIMARY FIELD OF STUDY (i.e. Animal Science): Business Analytics

INCLUDED IN LAST NSHE PLANNING REPORT: ☒ Yes ☐ No
(Website for NSHE Planning Reports: https://www.nevada.edu/ir/Page.php?p=planning)

TOTAL NUMBER OF CREDITS TO PROGRAM COMPLETION: 30

PROPOSED SEMESTER/TERM OF IMPLEMENTATION: Spring 2020

Action requested (specify full program title):
Master of Science in Business Analytics

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 Masters of Science in Business Analytics (MSBA) prepares students to launch a career exploring and analyzing data to identify, understand and answer questions that are critical to organizations. The degree program integrates knowledge and skills in big data management, quantitative analytical methods, organizational decision making, and information communication in order to address significant questions. The program is designed to meet the growing need for data science professionals, giving graduates the skills necessary to help organizations harness and

understand the power of information. Students completing the program will develop analytical skills and the expertise to solve complex problems from multiple perspectives. These skills are in demand across both profit and non-profit based organizations. Business analytics professionals are critical in helping guide organizations in solving 21st-century business challenges. Students completing the MSBA will have exposure to innovative learning methodologies that support data-driven decision making.

Programs in Business Analytics focus strongly on the business application of analytics helping students understand the questions that they are trying to answer. Programs are offered almost exclusively through colleges of business, though there is often an interdisciplinary emphasis in instruction. Graduates of MSBA programs qualify for employment in some, but not all, of the same jobs as graduates of Data Science and certain theoretically oriented analytics master's programs. This program provides students with diverse skills in order to launch a career as a professional focusing on the business use of data analytics.

The MSBA will be offered completely online (no face-to-face component) in conjunction with Pearson Embanet. The agreement between the university and Pearson Embanet to potentially offer this program was completed in January, 2019.

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

Program Mission Statement

The mission of UNR's MSBA Program is to prepare outstanding professionals for successful careers helping organizations make better decisions through analytics. The MSBA Program prepares students for the data-driven business world of the 21st century. The program helps students gain the quantitative skills necessary to effectively utilize data while balancing those skills with strong communication, organizational management, and general consulting knowledge. Graduates of the UNR program will be capable of transforming large data sets into usable and actionable information, while also presenting and communicating these results and recommendations to business leaders in order to create results and enact change.

Program Objectives

Business analytics is often associated with quantitative techniques that allow managerial decision makers to understand data, to make predictions with historic or real-time data, or to optimize certain decisions that a decision maker has control over in a business environment. The curriculum features needed technical skills within the general profession of business. The curriculum is not limited to the technical components related to business analytics. The curriculum will also feature topics such as strategic use of information systems, project leadership and effective communication techniques.

The focus of the curriculum will be to provide students with both the technical and business skills that employers demand currently and in the future. The curriculum emphasizes four interrelated components:

• Analytical methods: Students will learn how to develop questions that can be answered through quantitative techniques, and will learn how to apply those techniques.
• Data management: Data-supported decision-making requires the use of complex data sets. Students will learn how data is stored in organizations, and will learn how to transform and manage that data.
• Business and organization: Students must know how organizations make decisions in order to implement effectively a data-supported analytical environment. In addition, they need to understand

how to develop new and innovative business opportunities to strategically navigate the complex demands of the current and dynamic national and international business environments.
• Information Visualization and Communication: Students will learn how to effectively communicate using business-specific terminology in written and verbal form and facilitate information flow in a variety of organizational, social, and intercultural contexts.

In addition to those four interrelated components, two ongoing themes are emphasized through the curriculum: Critical thinking and ethics. Students will be encouraged to demonstrate critical-thinking skills, making the intellectual connection between quantitative and qualitative tools, theories and context to properly and effectively solve problems and make decisions. The curriculum will also highlight the security, ethical and privacy issues surrounding the use of data to support decision making.

Student learning in this program will be measured through the student learning outcomes (SLO's) listed below. These outcomes are based on industry demand and key feedback received from employers, industry advisory boards, and from attending national, regional, and state conferences.

Students completing the MSBA will be able to:

1. Collect, transform, and store large, diverse data sets within a high-data-velocity environment.
2. Formulate research questions that are capable of being addressed with analytical methods.
3. Describe and identify appropriate analytical methods (descriptive, diagnostic, predictive, and prescriptive) to address research questions.
4. Communicate the results of analytical activities clearly and concisely through visual methods.
5. Identify, describe and manage the activities necessary to help an organization make effective use of data-informed decision-making.
6. Describe the ethical and legal issues involved with collecting, storing, and using data.
7. Identify and analyze the security risks involved with collecting, storing, and using data.

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

Assessment is used to gauge the attainment of UNR's first Core Theme (Learning), one which impacts faculty, staff, and students past and present in each college and division, and to measure the efficacy of such education and training across these disciplines on our campus. Assessment allows us to investigate how well we are fulfilling our educational mission and to make data-driven decisions in both identifying effective curricula and considering whether or not curricula should be revised.

We will assess student learning outcomes in each course as listed in Table 1 of Appendix A. In accordance with our learning assessment requirements for AACSB accreditation, we will evaluate and assess student learning outcomes for each of our learning goals. Student learning outcomes (SLOs) data are measured through the completion of key assessments within the MSBA courses including scores on pre-defined assignments, test results, and project scores. Assessments are mapped to the stated program outcomes and data are collected through the online learning management system.

In addition to assessing student learning outcomes, we will also assess the efficacy of the program on an ongoing basis. A master's program of this type must necessarily evolve, partly because academic programs do but mostly because of the dynamic nature of this subject and its supporting technology. Industry representatives in the region have indicated an interest in supporting our master's program, and our external departmental advisory board (Information Systems Advisory Board - ISAB) is in support of this program (please see the letter from the chair of the advisory board included in Appendix B). We plan to create a sub-committee from the ISAB to help assess and evolve the program. This sub-committee will be charged with a number of tasks, including: (1) evaluating the success of the program periodically (e.g., bi-annually) (2) helping us devise new strategies for achieving our educational objectives, (3) assisting us in seeking new ways to train students that proactively integrate information systems and business education in support of the changing business environment, and (4) helping identify and obtain appropriate real-life analytics projects.

Another way to ensure that we are accomplishing the stated mission of our master's program is the inclusion of the business analytics project course (BAN710). Students in this course will complete either a comprehensive case study or a real-life business analytics project to test their ability to actually do data analytics work for an organization. This project will require students to integrate their understanding of the concepts that were taught throughout the program, and therefore help measure our success in such teaching. Successful completion of the project ensures that the students can apply the appropriate technologies to solve given business analytics problems.

Program assessment is managed through the department Curriculum committee and the College Learning Assessment committee. Members of the Information Systems department work with the College Learning Assessment committee in conjunction with Associate Dean for graduate programs to ensure that stated learning objectives are being met. Assessment data is used to monitor assurance of learning, improve student learning outcomes and inform accrediting bodies, particularly the AACSB.

Course assessment is completed by individual instructors in accordance with course student learning outcomes and grading criteria outlined in the syllabus.

The Department of Information Systems is dedicated to continuous improvement of our course offerings, and the proposed MSBA program is no exception to this mission. The MSBA will have a dedicated Program Director who will be responsible for gathering assessment data from individual course instructors and creating the program assessment report. Additional sources of information that will help the Program Director in this endeavor include: (1) student course evaluations, (2) informal student feedback, (3) employer feedback, (4) alumni surveys completed in alignment with the college, and (5) faculty experience with the curriculum's development. The Program Director will coordinate the findings with the Information Systems department Curriculum committee to ensure the ongoing evaluation and evolution of the program. The department Curriculum committee meets on a continuing basis throughout the academic year, and will conduct a formal review of admissions policies, course offerings, and class contents biannually.

D. Contribution and relationship of program objectives to

i. NSHE Master Plan

According to the NSHE Master Plan, higher education in Nevada will be instrumental in advancing society's objectives and enriching the lives of Nevada's citizens. One of the primary goals of the system states: "through instruction, research, and service, higher education in Nevada will be an essential element in developing and sustaining a strong, dynamic, knowledge-based economy for Nevada." For some time, the state of Nevada has sought to diversify its economic base and broaden the region's employment opportunities. The proposed MSBA program will help students further their education in information systems and business analytics while at the same time providing an educated labor pool that will attract and retain the high-tech companies our state seeks for such a knowledge-based economy. Thus, students graduating with an MSBA degree will be better prepared to contribute to these diversification goals and enhance the state economy. The MSBA program will train professionals to use best practices in data analytics.

ii. Institutional mission and core themes

"Inspired by its land-grant foundation, the University of Nevada, Reno provides outstanding learning, discovery, and engagement programs that serve the economic, social, environmental, and cultural needs of the citizens of Nevada, the nation, and the world. The University recognizes and embraces the critical importance of diversity in preparing students for global citizenship and is committed to a culture of excellence, inclusion, and accessibility."

The MSBA program will address the growing need for data science professionals, giving graduates the skills necessary to help organizations harness and understand the power of information. The MSBA program further supports the mission of UNR by: (1) providing greater educational depth in a targeted professional discipline, (2) enhancing the graduate offerings of the university, (3) creating greater outreach to the business community, and (4) serving the educational demands of the local and regional business, government and non-profit communities. In addition, the MSBA is an online degree program that will help extend the reach of the university beyond the borders of Nevada. This program will help broaden the alumni base, potentially throughout the world.

iii. Campus strategic plan and/or academic master plan

In the 2013 self-study document prepared for the Northwest Commission on Colleges and Universities (NWCCU), the University identified three interconnected "core themes" that relate to its broad mission. Here, these themes are restated and labeled as Learning, Discovery, and Engagement, recognizing each as a critical component of our broad mission:

Theme 1 – Learning: Prepare graduates to compete globally through high-quality undergraduate and graduate degree programs in the liberal arts, sciences, and selected professional programs. Theme 2 – Discovery: Create new knowledge through basic and applied research, scholarship, and artistry in strategically selected fields relevant to Nevada and its role in the wider world. Theme 3 – Engagement: Strengthen the social, economic, and environmental wellbeing of Nevada citizens, communities, organizations, and governments through community outreach and reciprocal partnerships.

The MSBA spans all three themes in the academic master plan. This is a professional program helping students develop the business analytical skills necessary to improve organizational performance. Students will be prepared to launch careers and compete in a global market. The proposed MSBA program is intended to produce students capable of managing and leading efforts to make the best use of business and data analysis skills and techniques. Students completing this program will be trained in the latest strategies for implementing information technologies in organizations as well as conducting research to extend our knowledge in this area. In addition to supporting a key initiative within the campus strategic plan, a new master's degree in a targeted professional discipline also supports the university's intent to enhance graduate education.

iv. Other programs in the institution

The College of Business has undergraduate programs in disciplines including accounting, information systems, finance, economics, management and marketing that provide students with the skills needed for entry-level positions in corporate and governmental entities. It also offers a master's in business administration (MBA) program for those individuals seeking advanced general management training. The College of Business offers specialized master's programs in Accounting, Information Systems, and Finance.

The College of Business at the University of Nevada, Reno has a vision to be a premier business school that produces research and graduates that enable economic vitality and inspire positive change in Nevada and the world. Our mission is to inspire, engage, and educate innovative change-makers through excellence in research, teaching, and outreach. We drive economic vitality and improve quality of life in our communities. Current initiatives focus on (1) discovery and research. (2) empowering a diverse community of student and faculty scholars with experiential and theory-based learning, (3) engaging our community as experts and active thought leaders and (4) collaborating to create an innovative entrepreneurial environment.

The proposed MSBA program will help the College of Business achieve its goals by expanding its reach through online course delivery to a wide distribution network and by providing an integrated approach to data analytics that is not offered by other degree programs at our university.

There are other data analytics programs in the institution. The Department of Mathematics & Statistics offers statistics and data science degrees at both the masters and doctoral levels. These degrees focus on helping students develop the advanced theoretical and computational skills necessary to solve applied problems involving data. They highlight attaining a deep understanding of the theory of statistics and data science, rather than looking at the application of analytics to applied business problems. Rather than emphasizing solving cooperative business problems, these programs help students develop the ability to do independent research.

The Department of Computer Science & Engineering offers an undergraduate minor in Big Data and includes data engineering topics in their masters and doctoral level programs. These areas of

emphasis focus on the technical requirements of big data from an engineering perspective rather than the application of data to solve business problems.

The MSBA program complements existing graduate programs at UNR, but does not duplicate them.

v. Other related programs in the System

UNLV offers a Master of Science in Data Analytics and Applied Economics. This program combines skills in programming, data gathering, data management, economics reasoning and statistical analysis, which makes it similar to the proposed MSBA. Courses for the program at UNLV are combined from the MIS and Economics disciplines at the university. This program includes many of the components of the program we are proposing, but does not highlight helping students understand the business applications of analytics or creating the visualization materials necessary to communicate analytics results to management and leaders in organizations. UNLV also offers a graduate certificate in Data Analytics. Both of these programs at UNLV are offered in a face-to-face format, rather than the online format we are proposing for the MSBA.

E. Evaluation of need for the program

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

The National Center for Education Statistics (NCES) tracks reported degree conferrals annually in the Integrated Postsecondary Education Data System (IPEDS). The examination of historical degree production and growth rates provides an indication of the trends within a degree marketplace and the market demand for a specific program.

In the case of the MS in Business Analytics, the IPEDS degree category that most closely matches is the 'Management Science' category. The number of reported master's degree conferrals in this category in 2014 was 1,666. This is up (65%) from 1,004 reported conferrals in 2010. The top producer in this category in 2014 was Northwestern University with 598-degree conferrals.

The need for this program is best defined by the intended growth rate of business data analyst professionals. The U.S. Department of Labor predicts a growth rate of 13.6% for management analysts and a growth rate of 18.6% for market research analysts, two professions directly related to students graduating from the MSBA program. The median base salary for an entry-level (0-3 years experience) data scientist was more than $95,000/year in 2018 and the Bureau of Labor Statistics predicts that jobs in this field will rise by 11% by 2024. Please see Appendix A Tables 2 and 4 for more detail regarding the growth rate of professions that are related to graduates from the proposed degree program.

ii. Student population to be served

To be eligible for the UNR MSBA program, a student must hold or be pursuing a bachelor's degree in business, engineering, mathematics, economics, science, computer science, or liberal arts. The MSBA program encourages students to apply to the program who have skills and an interest in quantitative analysis and information technology. The MSBA program is designed for students who graduated from college with a bachelor's degree and have limited or no full-time, post-graduate work experience. According to a program representative from Pearson Embanet, 60% of students joining this type of degree program have one year of experience; the remaining 40% have no work experience and are coming directly from their bachelor's degree.

According to the National Center for Education Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS), roughly 301,000 individuals received a bachelor's degree in the requisite fields in 2014.

MSBA applicants with job experience may come from a variety of backgrounds. Some common types are Management Analysts (13.6% projected growth rate 2014-2024), Market Research Analysts (18.6%), Financial Analyst (11.7%), Operations Research Analyst (30.2%), Statisticians (33.7%), Mathematicians (20.0%), and Actuaries (17.9%).

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

Competitive Landscape

Pearson conducts internet searches using Google Search to identify existing online programs that are actively marketing and would therefore be key competition for the proposed online program. A scan of the market for online MS in Business Analytics degrees revealed 25 fully online or low residency master's degree programs. Eight of the 25 programs use the exact degree nomenclature 'Business Analytics.' Eleven of the 25 programs are at nationally ranked institutions.

Search Volume

In order to assess the number of individuals actively searching for specific degree programs, Pearson Online Learning Services market research utilizes the Google AdWords Keyword Planner tool. Degree Keywords are terms that relate directly to master's degrees in the specific field. General keywords relate to more general search terms such as 'degree' or 'program,' for a specific field. The general terms are less likely to convert at as high a rate as the specific degree terms.

Due to the variety of degree program names and variations that are used within the market, six distinct keyword categories were used to estimate search volume. These categories were: 1) Business Analytics, 2) Analytics, 3) Data Analytics, 4) Predictive Analytics, 5) Business Analysis, and 6) Data Analysis. The summary table in Appendix A (please see Appendix A, Table 4) shows the breakdown of search impressions in each category. Beyond the market demand that this search volume indicates, it also shows that the nomenclature "Business Analytics" yields the highest search results followed by "Analytics."

- Research suggests a favorable market for an online MS in Business Analytics program. This includes the following points:
  - The number of degrees conferred meets a proper benchmark of 1,000 and is growing.
  - Search volume for a Master's in Business Analytics meets the Pearson benchmark of 2,000.
- UNR's program eligibility criteria should remain open to allow for more student admissions. For example, limiting the program to business, engineering, mathematics, economics, computer science graduates would greatly limit the available student market.
- There are 25 fully online or low residency comparable master's degree programs – 8 use the degree nomenclature 'Business Analytics.'

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

The Office of the Provost has reached an agreement with Pearson to develop and deliver course materials in conjunction with the Information Systems deparment in the College of Business. Three non-tenure track faculty lines have been approved to hire faculty to manage and deliver the curriculum. A Program Director has been identified; he is currently scheduled to begin employment at the University on July 1, 2019.

v. The timetable, with dates, for implementation steps

Phase 1: MSBA Curriculum Program Approval and Planning

12/24/18 Contract Signed
03/25/19 Conduct UNR Launch Planning/Kickoff Call
03/26/19 MSBA proposal into Curriculog
04/22/19 Begin weekly status calls with Pearson
04/30/19 UNR Graduate Council review
05/03/19 Identify faculty to develop the first two classes
05/06/19 Conduct instructional development kickoff call with Pearson and identified faculty
06/05/19 Academic Affairs Council review
06/10/19 Conduct on-campus Launch Visit (Curriculum, Admission and Registration Processes), Course Dev Faculty/PD Orientation
06/17/19 Pearson sends UNR Recruitment and Student Support Process Map for review
06/17/19 First Course Development Begins
06/24/19 Send UNR Marketing Materials/Assets for Review (Copy and Design)
07/22/19 UNR to provide final approval on Marketing Materials/Assets
09/05-06/19 Board of Regents review
09/15/19 NWCCU review and final approval (approximate)

Phase 2: Lead Generation and Course Development

8/5/2019 Second Course Development Begins
09/15/19 Lead Generation Begins (approximate)
10/7/2019 Finalize Pearson Student Support Services/Responsibilities (i.e., Monitoring New Student Orientation)
10/19/2019 Finalize Welcome Packet
10/25/2019 Begin Conducting Welcome Calls
11/15/2019 Application Deadline
12/12/2019 Bootcamp begins

Phase 3: Program Deployment
1/13/2020 Spring 2020 Classes Start
2/17/2020 Conduct first-term admission review
2/24/2020 Conduct end of semester launch satisfaction survey

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

As stated in Section D, point v, there are other, similar programs in the state. The justification for this program includes the following three points: (1) it will be focusing on business and organizational analytics; (2) it will integrate the four areas of business, data management, visualization, and analytical methods; and (3) it will be offered through a fully online delivery method.

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

Please see Appendix A Table 3 Career Enhancers.

F. Detailed curriculum proposal

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

Please see Appendix A - Table 5 Curriculum Map
Please see Appendix A - Table 6 Course Delivery Model

Students will take 10 courses for a total of 30 credits to complete the MSBA. There will be no elective courses offered as part of this program - all students will take the same 10 courses. All courses offered in this program are new to the Information Systems department. Each course listed below will need to be developed and implemented online in order to offer this program.

Courses to be developed for this program are:

BAN 701 - Business Analysis Methods, 3 credits

BAN 702 - Data Transformation & SQL, 3 credits

BAN 703 - Information Visualization & Communication, 3 credits

BAN 704 - Applied Data Science, 3 credits

BAN 705 - Enterprise Processes & Analytics, 3 credits

BAN 706 - Predictive Modeling & Data Mining, 3 credits

BAN 707 - Big Data, 3 credits

BAN 708 - Data Security, Risk Management, & Ethics, 3 credits

BAN 709 - Leadership Strategies, 3 credits

BAN 710 - Business Analytics Project, 3 credits

ii. Program entrance requirements

- Undergraduate degree from a regionally accredited school.
- GPA 2.75 in the last two years of undergraduate study.
- Proficiency in word processing and the general ability to use computers to analyze and solve business problems using software such as spreadsheets, statistical packages and databases.
- English language proficiency.
- Prerequisite courses - undergraduate course in Statistics, Introduction to Information Systems (which includes MS Office, especially Excel), and computer programming. Applicants lacking these prerequisite courses have the option to achieve the needed competencies via a 2-3 week, non-credit “Bootcamp," which would also cover basic programming understanding (R and Python). The Bootcamp will be developed and delivered by the program partner, Pearson Embanet.

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

- Satisfactory completion of 10 classes (30 credit hours) of coursework consistent with designed curriculum.
- Satisfactory completion of a Masters level professional project.
- Attain a minimum grade point average of 3.0.

Students with unsatisfactory progress towards the degree requirements are subject to dismissal. A student with a grade of C or lower in any of the required courses for the degree will be placed on probation for one semester. A student with two grades of C or lower will be dismissed from the program.

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

The MSBA program will be accredited by the AACSB—the national accreditation body that also accredits the College of Business Administration. In order to maintain accreditation for this program, courses must be designed and developed by faculty who are considered to be rated by AACSB as "scholarly academic." Scholarly academic faculty must have a terminal degree in Information Systems or a closely related field, and must maintain academic credentials by publishing scholarly papers in peer-reviewed journals.

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

G. Institutional Review Process

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

This proposal is to be reviewed and approved by:

Department of Information Systems - completed 2/11/19
College Curriculum Committee - completed 4/12/19
Dean of the College of Business - completed 4/12/19

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

The proposal was reviewed and approved by the UNR Graduate Council on April 30, 2019, and by the University Courses and Curricula Committee on May 9, 2019.

H. Readiness to begin program

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

Currently, there are six tenure-track full time faculty members in the area of Information Systems (IS), all of whom possess excellent qualifications for teaching in the proposed master's program. For example, all of these tenure-track faculty have doctoral degrees in IS or a related field and maintain their scholarly academic credentials by publishing papers in peer-reviewed journals. As a group they provide a good mix of both technical and managerial skills in IS. One additional tenure-track faculty member has agreed to join the department July 1st 2019. In

addition, the department has identified a MSBA Program Director who will begin employment July 1st 2019.

To offer this program, we need a minimum of one additional non-tenure-track faculty member with scholarly academic credentials and one additional non-tenure-track lecturer. The department has requested and been promised two additional faculty lines; one for a clinical faculty member (non-tenured) with terminal degree qualifications and the desire to maintain scholarly academic accreditation to design, develop and deliver courses in the curriculum, and the other for a lecturer to deliver courses in the program. Searches for these positions will commence in the fall of 2019. Thus, we believe that the proposed curriculum can be implemented with our current staff (including the new MSBA Program Director) and two additional full time faculty members. The IS Department also has an open faculty line for a tenure-track assistant professor (due to a retirement) and we will also be searching for that position in the fall of 2019.

The current IS faculty members have the necessary skills to offer most of the proposed master's program, which utilizes their teaching and research strengths. However, our existing faculty are needed to offer our current undergraduate and graduate curriculum. We do not have the existing resources to offer this new program. We would not be able to offer our current courses and the newly proposed MSBA program without additional faculty. We will look for individuals that both complement and augment the current faculty.

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

Open positions: We currently have an open position for a tenure-track faculty member and will recruit for that position starting in fall 2019. That position is not part of this new program proposal and is the result of a retirement from our current faculty.

Based on the acceptance of this program proposal, we will recruit for three additional positions to support the MSBA program beginning in the summer of 2019. We need a Program Director and two non-tenure-track faculty members to offer this program. We anticipate hiring a Program Director to start on 7/1/2019, a scholarly academic (clinical professor) non-tenure track faculty member to start 11/1/2019 and a lecturer to start in the late spring 2020.

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 Information Systems Department offers an undergraduate degree program in Information Systems and a Masters of Science in Information Systems (MSIS). Within the MSIS, there are two face-to-face tracks - one in the management of technology, and the other in data analytics. We do not currently offer any online degree programs and only offer two of our required undergraduate classes online (IS101 and IS301). The MSBA is an essential step forward in meeting the demand for advanced education in the information systems area of our department, as well as for the College of Business at the University of Nevada, Reno. The MSBA will contribute to our existing programs in the following ways:

1. The MSBA program will be offered exclusively online allowing us to reach students who are not be able to attend face-to-face classes.
2. Course material developed for the new analytics courses will be incorporated into our existing MSIS data analytics courses. We will use the material developed for the online courses in our face-to-face classes allowing us to rethink and refresh parts of our current degree program while also offering new courses in the online program. We anticipate reevaluating the structure of the data-analytics track to make use of the material developed for the MSBA program.
3. Courses in our existing undergraduate program will also benefit from the new material developed for the MSBA program. At present, for example, the IS faculty of our department

already teach combined undergraduate/graduate (400/600-level) courses in such selected areas as data communications/networking, systems analysis and design, database design and development, and web programming. These courses will also benefit from the new course material developed for the MSBA program.

The courses in our current MSIS face-to-face program are used as electives in the Masters of Business Adminstration and Masters of Accountancy programs. In addition, selected courses are also used as electives in other programs offered through departments such as the department of Computer Science, Sociology, and Psychology. We anticipate that the new material developed for the MSBA program will also be incorporated into the face-to-face MSIS classes helping us offer even more options for those other programs interested in applied data analytics.

We expect the availability of this program to enhance our ability to attract and retain high-quality, productive IS faculty. Most instructors holding Ph.D.s feel that it is essential to their scholarship and professional instructional responsibilities to teach graduate level courses. This new program helps expand our availability of graduate classes and students for faculty.

iv. Recommendations from prior program review and/or accreditation review teams
Not applicable

I. Resource Analysis

i. Proposed source of funds (enrollment-generated state funds, reallocation of existing funds, grants, other state funds)
The proposed MSBA program is being implemented in partnership with Pearson Embanet through an agreement with the Office of the Provost.

New faculty positions and start-up funds are provided through reallocated funds. The program will be supported through tuition revenues, and is projected to break even after approximately two years and become self-sustaining after approximately four years.

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 23

3rd Fall semester 90

5th Fall semester 87.5

(2) Explain the methodology/assumptions used in determining projected FTE figures.
The FTE calculation is based on a projection of a 5.5 average credit load per semester (students generally take 6 credits per semester) as compared to the normal 12 credit per semester load for full-time master's students.

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

1st Fall semester 50

3rd Fall semester 196

5th Fall semester 191

(2) Explain the methodology/assumptions used in determining projected headcount figures.
Headcount figures are based on projections by Pearson Embanet, in collaboration with the College of Business.

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

J. Facilities and equipment required

i. Existing facilities: type of space required, number of assignable square feet, space utilization assumptions, special requirements, modifications, effect on present programs
The program will be offered on-line so there are no new requirements for classroom space. The program will require office space for the three new faculty directly assigned to the program (Program Director, Scholarly Academic Faculty Member, and Lecturer Faculty member). Offices measuring 100 feet square result in the need for at least 300 square feet of office space, but most of the offices in the College of Business Administration building are not modular, and slightly more or less square footage will result, depending upon what existing offices are available for this purpose.

The department will require a robust computing environment for students to offer this program, due to the nature and complexity of the data analytics projects required throughout the program. Programmatic overhead is estimated to be roughly $6,900 per year. We will need a new computer server at the start of the program, and another new server after Year 5 of the program. There is space available for the new servers to be housed in the existing server room in the College of Business. No new space is necessary for computer equipment.

ii. Additional facilities required: number of assignable square feet, description of space required, special requirements, time sequence assumed for securing required space
Faculty office space will be allocated as described in J.i. No additional computer laboratory space is needed.

iii. Existing and additional equipment required
New office computers and office furniture will be required for the new faculty members required for this program. A reasonable cost estimate for this is $5,000 per person.

K. Describe the adequacy and availability of library and information resources
The library services provided through the Univeristy of Nevada, Reno are adequate to support the program.

L. Student services

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

One of the appealing aspects of partnering with Pearson for this program is their ability to market the program both regionally and nationally. Their revenue projections are based in large part on their ability to reach a wide target audince. We will work closely with Pearson to identify and target appropriate student populations for the MSBA program. In addition, we plan to advertise the availability of the MSBA program through mailings to alumni, local news media, local industry and through local professional associations. Companies that see the program's merit may sponsor some of their own employees to participate in the program.

Pearson Embanet will be responsible for fielding the initial inquiries of potential students. Pearson will be responsible for helping students who have not yet been accepted to the program with initial questions and planning of the potential degree. Pearson will help students determine whether this program is a good fit for a given applicant's career plans. Pearson will also be responsible for helping students gain the required prerequisite knowledge through an online bootcamp. Program faculty will be responsible for reviewing degree applications and conducting academic advisement sessions with students who have been accepted to the program. Program faculty will advise students as they progress through the program.

University student support services, such as the Graduate School and Admissions and Records, will be responsible for processing applications to the program, answering administrative questions, assisting students with financial aid, and reviewing degree requirements prior to graduation.

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

Not applicable

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

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

No consultants were used in developing the academic content of the proposed program. Pearson Embanet has provided market research and is collaborating with UNR to offer the MS, Business Analytics in the online delivery mode.

ii. Consultant's summary comments and recommendations

Please see Section E.iii.

iii. Summary of proposer's response to consultants

Please see Section E.iii.

N. Articulation Agreements

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

N/A

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

N/A

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

O. Summary Statement

This application documents our wish to offer a Master of Science degree in Business Analytics (MSBA). This project helps implement one of the University of Nevada, Reno's important strategic objectives—to develop targeted professional degree opportunities in areas that are projected to be critical to future development. The MSBA prepares students to launch a career exploring and analyzing data to identify, understand and answer questions that are critical to organizations. This degree program will help our potential students develop a strong career in an area of growing demand with well-paying employment opportunities. Offering such a degree program also addresses a vital need of both employers and employees in Northern Nevada, will help the state continue to attract and keep high-tech companies (and therefore diversify the economic tax base), and addresses student demand for advanced coursework in the area of data analytics and information systems.

The objective of the proposed master's program is to help students develop analytical and technical skills in the area of information systems as well as the conceptual knowledge they will need to solve managerial problems in business organizations. The plan includes a 30-credit program, outlines several methods for assessing attainment of student learning outcomes and program objectives, provides detailed admission requirements and course prerequisites, and includes a budget suggesting a possible positive net contribution to the university. The program will be completely online, giving potential students a new avenue of pursuing graduate education. The program requires a series of ten new, graduate level courses in the area of information systems and three additional full-time faculty members. If approved, we want to begin the program in the spring semester of 2020.

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

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

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

College/University: UNR **Program:** MS, Business Analytics

I. PLANNED STUDENT ENROLLMENT

Note: Enrollment numbers (A + B) for each fiscal year should match the FTE/Headcount numbers in the Academic Program Proposal Form (Sect. I.ii.).

	FY 1: FY 2021		FY 3: FY 2023		FY 5: FY 2025	
	FTE	Headcount	FTE	Headcount	FTE	Headcount
A. New enrollments to the Institution	23	50	90	196	87.5	191
B. Enrollments from Existing Programs	0	0	0	0	0	0

II. REVENUE

	FY 1: FY 2021		FY 3: FY 2023		FY 5: FY 2025	
	On-going	One-time	On-going	One-time	On-going	One-time
1. New Appropriated Funding Request						
2. Institution Funds	$147,152	$155,000				
3. Federal (e.g. grant, appropriation)						
4. New Tuition Revenues (registration fee) from Increased Enrollments*	$1,105,335		$3,280,022		$3,338,862	
5. Other Student Fees (associated with the program)*						
6. Other (i.e., Gifts)						
Total Revenue	$1,252,487	$155,000	$3,280,022	$0	$3,338,862	$0

Note: Total Revenue (Section I) should match Total Expenditures (Section III)

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

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

III. EXPENDITURES

	FY 1: FY 2021		FY 3: FY 2023		FY 5: FY 2025	
	On-going	One-time	On-going	One-time	On-going	One-time
A. Personnel Costs						
1. FTE (**Total FTE for all personnel types**)	4.32	0	5.99	0	5.99	0
Faculty	2		2		2	
Adjunct Faculty	0.66		2.33		2.33	
Grad Assts						
Research Personnel						
Directors/Administrators	1		1		1	
Administrative Support Personnel	0.66		0.66		0.66	
Other: _____						
	Expenditures for personnel type below must reflect FTE levels in Section A.1.					
2. Faculty	$244,800		$254,690		$264,979	
3. Adjunct Faculty	$69,945		$259,757		$270,251	
4. Graduate Assistants						
5. Research Personnel						
6. Directors/Administrators	$102,000		$106,121		$110,408	
7. Administrative Support Personnel	$30,462		$31,693		$32,973	
8. Fringe Benefits	$113,179		$117,751		$122,508	
9. Other:						
Total Personnel Costs	$560,386	$0	$770,011	$0	$801,119	$0

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

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

	FY 1: FY 2021		FY 3: FY 2023		FY 5: FY 2025	
	On-going	One-time	On-going	One-time	On-going	One-time
B. Operating Expenditures						
1. Travel	$6,000		$6,000		$6,000	
2. Professional Services (Pearson tuition share)	$663,201		$1,968,013		$2,003,317	
3. Other Services- course development costs	$22,000	$90,000	$33,000		$33,000	
4. Communications						
5. Materials and Supplies	$400		$400		$400	
6. Rentals						
7. Marketing materials and Advertising						
8. Miscellaneous		$40,000				
Total Operating Expenditures	$691,601	$130,000	$2,007,413	$0	$2,042,717	$0

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

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

	FY 1: FY 2021		FY 3: FY 2023		FY 5: FY 2025	
	On-going	One-time	On-going	One-time	On-going	One-time
C. Capital Outlay						
1. Library Resources						
2. Equipment	$500	$25,000	$500		$500	
Total Capital Outlay	$500	$25,000	$500	$0	$500	$0
TOTAL EXPENDITURES (IIIA + IIIB + IIIC):	$1,252,487	$155,000	$2,777,924	$0	$2,844,337	$0
Note : Total Expenditures (Section IIIA-C total) should match Total Revenue (Section I)						

Notes: *The MS in Business Analytics will be a self-supporting program.*
Revenue*- program tuition figures based on starting per-credit tuition of $990, increasing 2% per year. Regular load is 6 credits (5.5 used in calculations, per Pearson projections) per term and new students enter the program each term (Fall, Spring, Summer). Total annual student credit hours are estimated as follows: FY1- 1116, FY3- 3184, FY5- 3116.*

Expenditures- *Section A:*
*1. Faculty - one scholarly academic ($140,000) and one lecturer ($100,000). **
2. Adjuncts include 1) instructor for one course in addition to those covered by full-time faculty (.5 in FY21 for summer course that crosses fiscal years), and 2) course facilitators ($5000 per course).
*6. Program Director- $100,000 **
7. Support staff- NSHE Specialist ($50,000) and Admissions & Records Assistant III ($42,309)- each at .33 FTE.
8. Fringe benefits on faculty, director, and support staff calculated at 30%.

Expenditures*- Section B:*
1. Travel= faculty development.
2. Pearson tuition share= 60%.
3. Course development costs at $15,000 per course for full development; $5500 for course refresh. One-time costs prior to and during FY1- full development for 6 courses (additional 4 developed by full-time faculty). Ongoing course refresh expenses- 4 courses in FY1; 6 in FY3 and 6 in FY5.
5. Materials and Supplies= software.
8. Miscellaneous startup costs including faculty search costs ($10,000), faculty start-up ($15,000), and program development ($15,000).

Section C: One-time 25K equipment in FY1- computer server; ongoing- webcams, etc.

**Full-time faculty and director begin in Year 0, so have already had one 2% salary increase by FY2021.*

Appendix A

NSHE Program Proposal for MS in Business Analytics

Table 1. Courses Used to Assess Learning Goals

Courses		LG1	LG2	LG3	LG4	LG5	LG6	LG7
BAN 701	Business Analysis Methods		X	X				
BAN702	Data Transformation & SQL	X					X	X
BAN 703	Information Visualization & Communication				X		X	
BAN 704	Applied Data Science		X	X				
BAN 705	Enterprise Processes & Analytics				X	X		
BAN 706	Predictive Modeling & Data Mining			X		X		
BAN 707	Big Data	X		X			X	
BAN 708	Data Security, Risk Management & Ethics						X	X
BAN 709	Leadership Strategies				X	X	X	
BAN 710	Business Analytics Project					X		X

Table 2. Target Audience. The eligible audience size is 197K. The primary target audience consists of recent grads - with little to no work experience.

IPEDS Category	Degrees Conferred (2014)
Business	138,955
Economics	32,683
Liberal Arts	28,682
Engineering	67,019
Mathematics	19,708
Computer Science	13,824
Total Degrees Conferred, 2014 (all a	**300,871**
18-24 year old bachelor's degree conferrals in 2014 ed [1]	65.8%
Total Eligible Audience[3]	**197,973**

[1] 18-24 year olds are the individuals most likely to meet the limited or no full-time work experience requirement.

[3] Not all of these students will be interested in or required by their career path to pursue a master's degree.

Table 3. Career Enhancers. MS in Business Analytics applicants come from a variety of backgrounds. Some common types are profiled below:

Occupational Category	Eligible Audience Size, 2014	Projected Growth Rate, 2014-24
Management Analysts	310,780	13.6%
Market Research Analysts and Marketing Specialists	267,075	18.6%
Financial Analysts	125,753	11.7%
Cost Estimators	59,780	8.8%
Operations Research Analysts	37,159	30.2%
Budget Analysts	28,211	2.5%
Actuaries	15,080	17.9%
Statisticians	9,030	33.7%
Mathematicians	1,054	20.0%
Total and Weighted Average	**853,921**	**15.2%**

* Percentages in red fall below the national average projected growth rate for all jobs (6.5%).

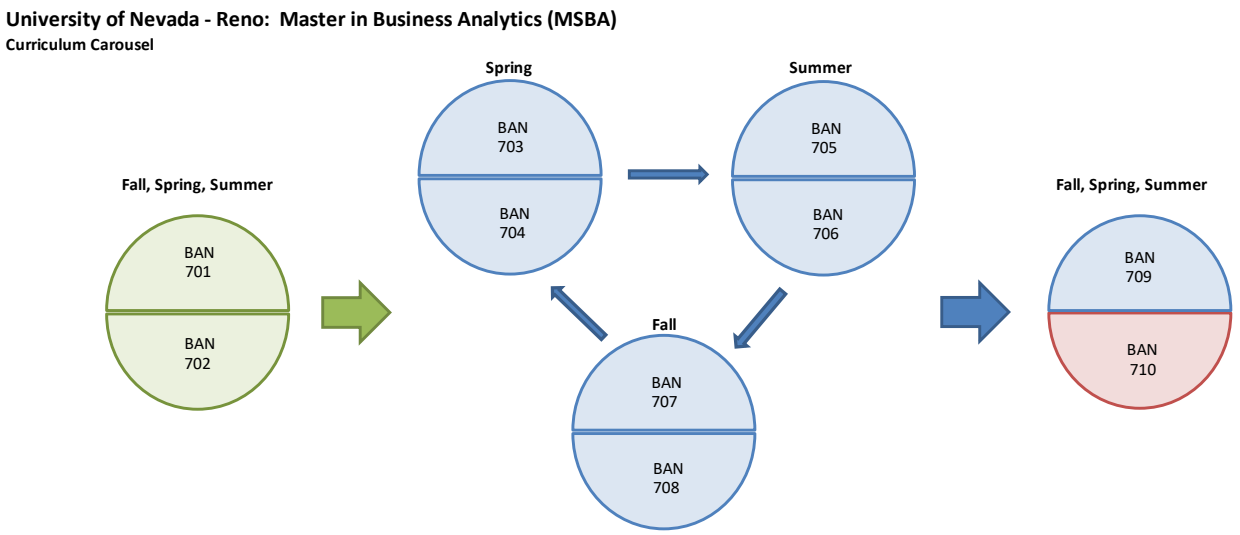
Table 4. Google Search Volume Results by Analytics Categories:

	Total Searches per Month	
Keyword Category	Degree-Specific Keywords	General Keywords
Business Analytics	2,790	580
Analytics	2,210	380
Data Analytics	1,700	410
Predictive Analytics	450	150
Business Analysis	160	70
Data Analysis	150	170

Table 5. Curriculum Map

Master in Business Analytics (MSBA)						
UNR>Master in Business Analytics (MSBA)> Curriculum Map		Pre-Requisite	Credits	30 credits		
				Degree and Specialization Courses		
				Fall	Summer	Spring
BAN 701	Business Analysis Methods	w/BAN 702	3	X	X	X
BAN 702	Data Transformation and SQL	w/ BAN 701	3	X	X	X
Total Core Credits			6			
BAN 703	Information Visualization & Communication	Core	3			X
BAN 704	Applied Data Science	Core	3			X
BAN 705	Enterprise Processes & Analytics	Core	3		X	
BAN 706	Predictive Modeling & Data Mining	Core	3		X	
BAN 707	Big Data	Core	3	X		
BAN 708	Data Security, Risk Management & Ethics	Core	3	X		
BAN 709	Leadership Strategies	Core	3	X	X	X
Total Carousel Credits			18			
BAN 710	Business Analytics Project	Carousel	3	X	X	X
Total Capstone Credits			3			
Total Degree Credits			27			
Total Courses			9			

Table 6. Course Delivery Model



April 1, 2019

Joshua C Bartella
Microsoft
6100 Neil Road, Mailstop C2
Reno, NV 89511

Dear Members of the Board of Regents,

I am writing to you to express my full support for the recommendation being put forward to invest in a Master of Science in Business Analytics within the Information Systems (IS) department from the College of Business at the University of Nevada, Reno.

Over my last 15+ years in industry, I have seen a rapid evolution towards digital transformation. This includes modernizing our workplace thru process automation, digitizing workflows, experiences and interactions with customers. At the core of all of this is the vast amounts of data that it creates. The Masters of Science in Business Analytics (MSBA) prepares students to launch a career exploring and analyzing data to identify, understand and answer questions that are critical to organizations. The degree program integrates knowledge and skills in big data management, quantitative methods, organizational decision making, and information communication to address significant questions.

In a modern workplace, the ability to access, make sense of and use this information is core to a company's success in modern industry. People are the primary asset of all organizations. The program is designed to meet the growing need for data science professionals, giving graduates the skills necessary to help organizations harness and understand the power of information. Students completing the program will develop analytical skills and the expertise to solve complex problems from multiple perspectives. These skills are in demand across both profit and non-profit based organizations, including Microsoft. Business analytics professionals are critical in helping guide organizations in solving 21st-century business challenges. Students completing the MSBA will have exposure to innovative learning methodologies that support data-driven decision making.

In addition, throughout our discussions at the Information Systems Advisory Board all business leaders recognize the importance of building these skillsets within students to better prepare them for today's digital world & our modern workplace. An investment in this program creates immediate opportunities for students to enter the workforce better prepared. As we look at the types of jobs that exist today (e.g. program specialists, product managers, business analysts, process manager/engineers, etc.) having a strong command of data and the ability to do analysis is core to their success in launching a career in business analytics.

Based on my experience in industry and recognizing first-hand the digital transformation that is occurring both within our organization as well as the broader marketplace, I strongly support the recommendation to invest in a Masters of Science in Business Analytics degree that better prepares our students entering the industry of tomorrow. I think the cost of doing nothing significantly outweighs the investment required to do this successfully.

If you have any questions regarding this recommendation, please contact me directly at +1 (775) 223-3673 or email me directly at joshua.bartella@microsoft.com

Sincerely,

Joshua C Bartella

Director, Operations

Microsoft Corporation