March 28, 2024

Jeff Gold, EVP and Provost
University of Nebraska
3835 Holdrege Street
Lincoln, NE 68583-0745

Dear EVPP Gold,

I am forwarding to you materials related to a proposal to create a new undergraduate major in Business Analytics within the Bachelor of Science in Business Administration degree to be administered by the Department of Supply Chain Management and Analytics in the College of Business.

The proposed major requires no new faculty or resources and utilizes existing courses. The Business Analytics major builds upon the Business Analytics undergraduate minor that has grown substantially over the past five years. The major is expected to attract international students as the field of business analytics was recently added to the U.S. Department of Homeland Security as a STEM-designed program that will allow graduates to continue working in the United States for extended Optional Practical Training (OPT).

This proposal has the unanimous endorsement of the Academic Planning Committee, the Executive Vice Chancellor, the Dean of the College of Business and it has my approval. I am requesting you approve it and that it be reported to the Board of Regents at its next regular meeting.

Sincerely,

Rodney D. Bennett, Ed.D.
Chancellor

c: Memet Can Vuran, Chair, Academic Planning Committee
Katherine Ankerson Executive Vice Chancellor
Kathy Farrell, Dean, College of Business
Laurie Miller, Associate Dean, College of Business
Jennifer Ryan, Professor, Department Chair
Josh Davis, Associate to the Chancellor
Renee Batman, Assistant Vice Chancellor
Suzi Tamerius, Project Coordinator
Karen Griffin, Coordinator of Faculty Governance
David Jackson, Vice Provost
Angela Iwan, Executive Assistant to the Provost

University of Nebraska Lincoln
Office of the Chancellor
201 Canfield Administration, PO Box 880419 | Lincoln, NE 68588-0419 | 402.472.2116

University of Nebraska Lincoln

FACULTY SENATE OFFICE
ACADEMIC PLANNING COMMITTEE

March 21, 2024

Chancellor Rodney Bennett
201 Canfield Administration
City Campus (0419)

Dear Chancellor Bennett:

The Academic Planning Committee (APC) considered a proposal to create a new major in Business Analytics within the Bachelor of Science in Business Administration degree. The program will be administered by the Department of. Supply Chain Management and Analytics in the College of Business. The APC voted to recommend approval of the proposal at its March 20, 2024, meeting and I am forwarding this proposal for your consideration.

Sincerely,

Memet Can Vuran, Chair, Academic Planning Committee and Professor, School of Computing

c: Executive Vice Chancellor Katherine Ankerson
Dean Kathy Farrell
Associate Dean Laurie Miller
Professor Jennifer Ryan
Associate to the Chancellor Josh Davis
Assistant Vice Chancellor Renee Batman
Project Coordinator Suzi Tamerius

MEMORANDUM

TO: Can Vuran, APC Chair

FROM: Katherine Ankerson, Executive Vice Chancellor KSA

DATE: August 28, 2023

SUBJECT: Proposal to Create New Undergraduate Major - Business Analytics (BSBA)

Attached please find a proposal to create a new major in Business Analytics within the Bachelor of Science in Business Administration degree to be administered by the Department of Supply Chain Management and Analytics in the College of Business.

The program fills a gap in UNL's current offerings, has strong industry support, and meets an important workforce need. While designing the new data science major (launched in fall 2023), an external market analysis identified business analytics as a related, yet unique opportunity for UNL. A more recent market analysis affirmed strong interest by prospective students and a robust employment outlook for graduates. The major is expected to be attractive to international students as the field of business analytics was recently added to the U.S. Department of Homeland Security as a STEM-designated program that will allow graduates to continue working in the United States for extended Optional Practical Training (OPT).

The major utilizes existing courses and does not require new resources. The Business Analytics major builds upon the Business Analytics undergraduate minor that has grown substantially over the past five years and complements the well-established M.S. in Business Analytics. I am optimistic that this program will have an immediate, positive impact for our campus, future students, and state.

The proposal has the support of the College of Business faculty and curriculum committees and Dean Kathy Farrell. I fully support this proposal.

University of Nebraska Lincoln
Office of the Executive Vice Chancellor and Chief Academic Officer
208 Canfield Administration Building | P.O. Box 880420 | Lincoln, NE 68588-0420 | 402.472.3751 | fax 402.472.4929
executivevc.unl.edu

University of Nebraska-Lincoln
New Undergraduate Major or Degree

I. Descriptive Information

Name of Institution Proposing New Major or Degree	
University of Nebraska-Lincoln	
Name of Proposed Major or Degree	
Business Analytics	
Degree to be Awarded to Graduates of the Major	
Bachelor of Science in Business Administration	
Other Majors or Degrees Offered in this Field by Institution	
Minor in Business Analytics Graduate Certificate in Business Analytics M.S. in Business Analytics Ph.D. in Business with specialization in Supply Chain Management and Analytics	
CIP Code: 6 digit *[Browse here: http://nces.ed.gov/ipeds/cipcode/Default.aspx?y=55]*	
30.7102	
Subject Code: 4 characters	
SCMA	
Administrative Units for the Major or Degree	
Department of Supply Chain Management and Analytics, College of Business	
Proposed Delivery Site	
University of Nebraska-Lincoln	
Program will be Offered *[full program, not individual courses]*	
___X___ On-campus only _____ Distance only _____ Both (on-campus and distance)	
Program leads to licensure or certification	
___X___ no _____ yes If yes, explain:	
Curriculum Categories and Number of Credit Hours (must equal 120 credit hours)	
Existing or repackaged curricula:	__105_ credit hours
Revised or redesigned curricula:	__9___ credit hours
New curricula:	__6___ credit hours
Proposed Date the New Major or Degree will be Initiated	
August 2024, or upon CCPE approval	

II. Details

A. Purpose of the Proposed Major or Degree:

Business analytics is the process of transforming data into information and insights to help organizations of all types make better decisions and achieve their strategic goals. There are three main aspects of business analytics: (1) descriptive analytics is the use of data to describe what has happened; (2) predictive analytics is the use of data to predict what will happen; and (3) prescriptive analytics is the use of data, and the output of descriptive and predictive analytics, to make good decisions and recommendations for action.

The proposed major in business analytics will train undergraduate students to solve a variety of problems faced by businesses and other organizations using a range of statistical, analytical, and computational approaches. Critically, the curriculum will cover all three aspects of business analytics in a unified and coherent manner, with the understanding that descriptive and predictive methods, such as statistical analysis and forecasting, are not sufficient to support good decision-making. Instead, descriptive, and predictive analysis must be combined with a thorough understanding of the problem context to support the prescriptive, i.e., decision-making, step. That context includes the goals of the organization, client, or customer; all relevant costs, revenues, and non-monetary objectives; and the current operating conditions and constraints faced by the organization. Further, an understanding of the business context, the decisions to be made, and how those decisions will be implemented, are critical for defining and collecting the data and other information that is needed to support business decision making.

Therefore, the courses included as part of the business analytics major are designed to teach students how to (1) use existing software tools and relevant quantitative methods to manipulate and analyze data; (2) combine data, analytical techniques and an understanding of the application domain to support business decision-making; (3) communicate effectively regarding data, analysis, results and recommendations, including visual, oral and written forms of communication; and (4) work with information technology specialists, statisticians and data scientists to design and improve an organization's systems for collecting, maintaining and analyzing data to support business decision-making.

In Section E of this proposal, we discuss how the proposed business analytics major differs from existing programs on the UNL campus, including the data science major and statistics and data analytics major. In summary, business analytics differs from data science and statistics because of its focus on decision-making. The first two aspects of business analytics, i.e., the descriptive and predictive steps, are designed to support the third step, prescriptive analytics, i.e., decision-making. As noted above, prescriptive analytics requires an understanding of business or organizational context, but data science and statistics do not teach that context. Further, in many cases, the business or organizational context needs to be considered prior to collecting the data, i.e., without understanding the business problem to be addressed and the setting in which data is generated, it is difficult to know the type of data that can and should be collected. The business analytics major is designed to provide a comprehensive education in all aspects of business so that graduates will possess that necessary context. On the other hand, for a business analytics role, intensive training in programming, statistical methodology and mathematics is not required because business analysts typically work in conjunction with data scientists, who possess those skills. Thus, the business analytics major requires less training in those areas than a data science or statistics degree, allowing for more in-depth training in the fundamentals of business.

In addition, the manner in which quantitative and analytical methods are taught to business analytics students will necessarily differ from the manner in which similar methods are taught to data science or statistics students. The focus of business analytics instruction is on how to select, apply, and interpret business analytics methods in the context of relevant business problems, without providing in-depth education in the underlying theory. This approach is appropriate and useful for business students, who possess a comprehensive understanding of the business context, but who do not possess a background in mathematical theory or extensive experience in

computer programming. To further demonstrate this distinction, in Section E of this proposal we discuss the content of three specific courses to be included in the proposed major.

The proposed major in business analytics builds upon the existing business analytics minor, offered by the Supply Chain Management and Analytics (SCMA) Department, which has grown substantially over the past five years, with more than 100 students enrolled in the fall semester of 2022. Further, the proposed major will complement the existing M.S. in Business Analytics (also offered by the SCMA Department), which is an online degree designed for working professionals seeking to enhance their quantitative skills and build career opportunities. Both the undergraduate minor and the M.S. in Business Analytics are well-established and supported by a set of qualified and experienced faculty, having been offered for more than 5 years.

Finally, the proposed major will be STEM-designated, which will facilitate recruitment of international students. The CIP code for business analytics (30.7102), was recently added to the U.S. Department of Homeland Security STEM Designated Degree Program List. Therefore, graduates of business analytics programs are eligible for the 24-month STEM optional practical training extension, an attractive feature when recruiting international students because it extends the time they are allowed to work in the United States after graduation.

B. Description of the Proposed Major or Degree:

In addition to the core curriculum requirements that must be completed by all students within the College of Business, the proposed business analytics major consists of seven required courses plus two directed electives, for a total of 27 credit hours. These courses are listed in the table provided in part II.B of this document. The required courses include an experiential learning capstone course, while the elective courses provide a wide variety of options to demonstrate the application of analytics in diverse areas of business. This set of elective courses will eventually be expanded to include options from every department in the College of Business, with the goal of providing exposure to analytics methods and applications in every functional area of business. This will allow students to tailor their coursework for their specific interests and will be valuable for students interested in pursuing a double major.

<u>Learning Outcomes for Business Analytics Major</u>

1. Understand the variety of quantitative methods used in business analytics and the types of business problems for which each method is most appropriate.
2. Learn software tools and systems that are relevant for data analysis and decision-making in a business context.
3. Understand the importance of data, information, and quantitative models in supporting business decision-making.
4. Develop the ability to effectively communicate about data and quantitative analysis, with an emphasis on providing insights and recommendations that support business decision-making.

<u>Admission Criteria</u>

Business Analytics majors are required to take a common set of foundation and business core courses. To enroll in these courses, students must meet stated prerequisites. For example, to register for Business Intermediate Core courses, students must have at least a 2.5 cumulative GPA and have completed MATH104 (Applied Calculus), ACCT201 and ACCT202 (Principles of Accounting I and II), ECON211 and ECON212 (Macroeconomics and Microeconomics), BSAD220 (Business Writing, and ECON215 (Statistics). Enrollment in all courses for the proposed major in business analytics will require at least a 2.5 cumulative GPA, and a 2.5 cumulative GPA is required in order to apply for a degree.

<u>Requirements for the Business Analytics Major</u>

If approved, the business analytics major would become the twelfth major offered in the College of Business. Students in the major must complete the foundation and business core courses required for all College of Business majors. In addition, the proposed major consists of seven required courses plus two directed electives, for a total of 27 credit hours.

- The required courses include one course on data management, along with courses in each of the three aspects of business analytics, i.e., descriptive, predictive and prescriptive analytics.
- The required courses include an experiential learning capstone course (SCMA 454) which must be taken in the final spring or fall semester prior to graduation, and which will have teams of students solve real-world, company-based business analytics problems under the supervision of a faculty member.
- A wide variety of options are available for the two elective courses, including courses from every department in the College of Business, with the goals of providing exposure to analytics methods and applications in every functional area of business, as well as facilitating double majoring by College of Business students.

The course chart on pages 5 and 6 provides a complete list of the required and elective courses for the major. The table also lists credit hours, prerequisites, and course fees. The table on pages 7 and 8 provides a tentative plan of study for the proposed business analytics major, showing the recommended timing and sequence in which students should take the required and elective courses.

Student Advising

The College of Business uses a professional advising staff housed in the Business Advising and Student Engagement (BASE) Office to advise students. Advisors will be trained regarding the requirements for the new major. In addition, trained career coaches in the College's Business Career Center can advise students on the employment opportunities available to students with this major.

National Guidelines and Accreditation

There are no national standards or accreditations for this major. The College of Business is accredited by the Association to Advance Collegiate Schools of Business (AACSB). As part of the accreditation process for the existing undergraduate programs, assurance of learning data is currently collected in several of the core courses required for the major.

Impact on Course Codes

There will be no impact on course codes. All new courses will be created under an existing course code within the College of Business.

Course Chart

Course Number	Major/Degree # Credit Hours	Prerequisites, if applicable	Course and Lab Fees
College of Business Foundation Courses			
BSAD111, BSAD222, BSAD 333, BSAD444 Career Prep Courses	4		
ECON211 Principles of Macroeconomics (ACE)	3		
ECON212 Principles of Microeconomics	3		
ACCT201 Principles of Accounting I	3		
ACCT202 Principles of Accounting II	3		
ECON215 Statistics	3		
BSAD220 Business Writing	3		
BSAD50 Business Computer Applications	0		
BSAD250 Spreadsheet Analytics	1		
Total Foundation Credit Hours	**23**		
College of Business Intermediate Core Courses			
BLAW371 Legal Environment or BLAW372 Business Law I (ACE)	3		
MNGT301 Principles of Management	3		
MRKT341 Principles of Marketing	3		
FINA361 Finance	3		
SCMA350 (Business Analytics/Information Analysis)	3		
SCMA331 (Operations and Supply Chain Management)	3		
Total Business Intermediate Core Credit Hours	**18**		
Business Analytics Core Requirements			
SCMA 335 Decision Making Models	3	BSAD 50; (MATH104 or MATH106 or MATH107/MATH107H or MATH208/MATH208H; ACCT201 or ACCT201H or RAIK181H; ECON211 or ECON211H or RAIK282H; ECON212 or ECON212H or RAIK182H; ECON215 or ECON215H or STAT218). 2.5 GPA	

SCMA 437 Risk and Decision Analysis	3	SCMA331, SCMA350	$40
SCMA 450 Communication for Business Analytics	3	SCMA350	
SCMA 451 Introduction to Predictive Analytics	3	SCMA350	
SCMA 452 Database Management Systems	3	SCMA350	
SCMA 453 Machine Learning Applications for Business Analytics	3	SCMA350	
SCMA 454 Business Analytics Applications in Practice	3	SCMA450, SCMA453 co-requisites	
Electives in the Major (choose any two courses)	**6**		
ACCT 308 Managerial Accounting	3		
ACCT 309 Accounting Systems	3		
ACTS 430 Actuarial Applications of Applied Statistics	3		
ACTS 431 Time Series and Machine Learning	3		
ECON 315 Economic Data Visualization and Analysis	3		
ECON 417 Introductory Econometrics	3		
FINA 401 Quantitative Financial Analysis	3		
MNGT XXX HR Analytics *This course is currently under development*	3		
MRKT 345 Market Research	3		
MRKT 350 Marketing Analytics	3		
SCMA 436 Managing Projects under Uncertainty	3		
Total Major Credit Hours	**27**		
Achievement Centered Education (ACE) Requirements not met by business coursework	**9**		
MNGT 475	**3**		
Achievement Centered Education (ACE) Requirements not met by business coursework	**12**		
General Electives	**28**		
Total Credit Hours for Degree	**120**		

Sample Four Year Plan

TERM 1	**Total Credit Hours:**	**16**
Prof Enhancement I	complete BSAD 111	1
NBR 1/ACE 1 Written Texts	complete either ENGL 150 or ENGL 151	3
NBR 2/ACE 3 Mathematics Critical	complete either MATH 104 or MATH 106	3
MATH 104 or MATH 106 becomes critical to your success in the major if not completed by the fourth term of enrollment.		
NBR 3/ACE 4 Sciences	complete one from ACE4	3
NBR 4/ACE 5 Humanities	complete one from ACE5	3
Electives	recommend one or more courses	3
TERM 2	**Total Credit Hours:**	**15**
Business Comp Appl	complete BSAD 50	0
Introductory Accounting	complete ACCT 201	3
Prin of Economics ACE 6	complete either ECON 211 or ECON 212	3
NBR 5/ACE 7 Arts	complete one from ACE7	3
NBR 6/ACE 9 Global/Divers	complete one from Approved ACE 9 Courses for College of Business Majors	3
Electives	recommend one or more courses	3
TERM 3	**Total Credit Hours:**	**16**
Business Comp Appl	complete SCMA 250	1
Introductory Accounting	complete ACCT 202	3
Prin of Economics ACE 6	complete either ECON 211 or ECON 212	3
Statistics	complete ECON 215	3
NBR 7/ACE 1 Busn Comm	complete BSAD 220	3
Electives	recommend one or more courses	3
TERM 4	**Total Credit Hours:**	**16**
Prof Enhancement II	complete BSAD 222	1
Busn Core Interm (ACE 8)	complete SCMA 331, SCMA 350, MRKT 341	9
NBR 8/ACE 2 Comm Skills	complete either COMM 286 or MRKT 257	3
Business Analytics Core Critical	complete SCMA 335	3
SCMA 335 becomes critical to your success in the major if not completed by the fifth term of enrollment.		
TERM 5	**Total Credit Hours:**	**16**
Prof Enhancement III	complete BSAD 333	1
Busn Core Interm (ACE 8)	complete FINA 361, MNGT 301	6
Business Analytics Core Critical	complete SCMA 437, SCMA 450	6
300/400 Up Lvl Reqt	recommended one course that fulfills International Business course requirement	3
TERM 6	**Total Credit Hours:**	**15**
Business Analytics Core Critical	complete SCMA 451, SCMA 452	6
Busn Core Interm (ACE 8)	complete either BLAW 371 or BLAW 372	3
Business Analytics Major	complete one from directed electives	3
Electives	recommend one or more courses	3
TERM 7	**Total Credit Hours:**	**14**
Prof Enhancement IV	complete BSAD 444	1
Business Analytics Core Critical	complete SCMA 453	3
Business Analytics Major	complete one course from directed electives	3
Electives	recommend one or more courses	7

TERM 8	Total Credit Hours:	12
ACE 10 Capstone Course	complete MNGT 475	3
Senior Assessment	complete BSAD 98	0
Business Analytics Core Critical	complete SCMA 454	3
Electives	recommend one or more courses	3
300/400 Up Lvl Reqt	complete either any course at the 300 Level or Any Course at the 400 Level	3

Graduation Requirements	Total Credit Hours:	120
2.50 cumulative GPA required in order to apply for a degree.	Business Analytics Core Critical	21
30 of the last 36 hours must be taken at UNL	Business Analytics Major	6
Maximum 6 hours Pass/No Pass credit excluding BSAD 98, BSAD 111, BSAD 50, BSAD 222, BSAD 333, and BSAD 444.		
Total Credits Applying Toward 120 Total Hours		

C. Plans for Implementation

As noted previously, the SCMA Department and College of Business have been offering a minor in business analytics, as well as a major in supply chain management, for several years. As a result, most of the courses required for the proposed major are already in existence and have been taught on a regular basis in support of the business analytics minor and the supply chain management major. Initially, there will be no change to the frequency or schedule of offering for those courses, and we anticipate that all interested students can be accommodated in the existing sections of these courses, possibly by leveraging classrooms with a larger capacity, if appropriate. However, if the number of business analytics majors grows substantially, additional sections will be added as needed.

Further, the SCMA Department currently consists of thirteen tenure/tenure-track faculty and three professors of practice. Thus, the department has and will continue to have a significant number of qualified and experienced faculty who will teach the required courses for the business analytics major. Further, the elective courses for the major are offered by a variety of different departments within the College of Business and will be staffed by qualified and experienced faculty from those departments. The appendix contains CVs for all faculty currently teaching courses that are a part of the proposed business analytics major.

The creation of the business analytics major will require the development of two new courses. Both of those new courses have been proposed within the College of Business, including the development of the catalogue descriptions and syllabi. One of those courses, SCMA 453, is modeled after an analogous 800-level course, SCMA 853, which is part of the existing M.S. in Business Analytics program. Hence, identifying relevant faculty and course content for this new course will be straightforward. The other new course, SCMA 454, is a project-based capstone course which is similar to an existing course, SCMA 474, which is required for the undergraduate major in supply chain management, also offered by the SCMA Department. Thus, in designing the course format and content, and identifying relevant industry contacts to provide projects, we will leverage the industry contacts already developed and used for SCMA 474. To identify projects, we will also take advantage of the wide variety of companies and other organizations represented on the industry advisory boards for each of the departments within the College of Business. Initially, i.e., until the proposed major reaches a critical mass of students, we will combine the instruction of SCMA 474 and SCMA 454, which will allow us to offer the new major in an efficient manner. However, in doing so, we will ensure that projects are representative of the broad

field of business, not just supply chain management, and ensure that proper faculty supervision is available for those projects.

Subject to the full approval for the proposed major, we anticipate offering the major with a start date of August 2024, or upon CCPE approval. Since the business analytics minor currently has strong enrollments (with more than 100 students currently enrolled), we anticipate that the first year of the major could see enrollment of approximately 30 students, with the potential for enrollments to grow to approximately 65 students by year 5. Further, we anticipate that a significant number of these students will be double majors, and we will work with the Business Advising and Student Engagement (BASE) Office and each of the departments within the College of Business to develop customized plans of study to facilitate double majoring. We conservatively estimate the number of new enrollments, i.e., students who otherwise would not have enrolled in the College of Business, will grow to about 13 students by year 5. These specific enrollment projections, and their impact on revenues, are shown in the revenue table in the appendix.

III. Review Criteria

A. Centrality to UNL Role and Mission

The proposed degree program is consistent with expectations of the business community, the plans of the College of Business, and the strategic plan of UNL. The proposed program would offer an academic major with promising, high salary employment opportunities available to graduating students. The major will develop needed skills and expertise to support Nebraska businesses, government entities and non-profit organizations. The curriculum has been designed in consultation with members of the College of Business' industrial advisory boards, ensuring relevance and currency of content. Thus, it will provide education and training in the methods, skills, and tools most needed by business analytics professionals. By doing so, it will address the growing need of local and regional employers for potential employees trained and experienced in those methods and tools. Further, the major will use a well-planned and efficiently delivered curriculum, leveraging existing resources and faculty within the College of Business, and thus can be implemented without significant additional costs.

Further, the proposed program will contribute directly to the following aim from the N2025 Strategic Plan (https://www.unl.edu/chancellor/n2025-draft-report):

- *Innovate student experiences that prepare graduates for life-long learning and contributing to Nebraska's diverse future workforce.*

As noted above, and as discussed further below, there is and will continue to be a substantial need to develop a workforce trained in business analytics methods and tools. Companies and organizations in all sectors of the economy currently collect and utilize large amounts of data to assist in the management, improvement, and growth of their organizations to meet their strategic objectives. Thus, the organizations require employees who can bridge the gap between data management/analysis and business decision-making. Given that the curriculum of the proposed major incorporates all aspects of business analytics, and provides exposure to all functional areas of business, graduates of the program should be well-positioned to fill those roles.

To assess the needs of industry for students trained in business analytics methods and tools, we conducted an industry roundtable in November 2022. The participants included representatives of local and regional organizations such as Bryan Health, Hudl, Nelnet and the Kansas City Chiefs. The feedback on the proposed major was quite positive overall and all participants agreed that there is a substantial need for workers trained in both the foundations of business and the quantitative methods used to support decision-making. Further, as a result of this roundtable, we revised our curriculum to include a specific course related to communication and storytelling, as well as an experiential learning capstone course. This course has been fully approved by the UUCC.

The proposed curriculum also contributes to the achievement of the N2025 strategic plan because it is designed to foster life-long learning. In particular, the courses have been designed to be independent of specific software or programming languages. Rather than designing course content around specific, currently used software packages or programming languages, which are known to evolve and change rapidly, we have created courses that teach the fundamental methods and techniques that can be employed in business analytics, leveraging software packages and programming languages to demonstrate the implementation of those methods and techniques on real-world data. Further, where appropriate, we provide exposure to multiple options for such implementation. Thus, the proposed major will produce graduates who are more readily able to keep pace as the business analytics landscape evolves, and who possess the ability to adapt as the most commonly used software packages and programming languages change over time.

Finally, the inclusion of a required experiential learning capstone course will provide graduates with a real-world, hands-on learning experience that should enable them to contribute more quickly and effectively to their future employees. Further, by participating in these capstone projects, local companies and other organizations will become exposed to some of the cutting-edge methods and tools currently being used to address business analytics problems.

B. Relationship of the proposal to the NU 5-year strategy

The proposed major will address a number of the priorities in the NU 5-year strategy, particularly "Fulfilling Nebraska's Workforce Needs." For example, that priority notes that the following:

- *[The] state will have more than 34,000 annual openings in high-skill, high-demand, high-wage (H3) jobs in the years ahead…. Demand for more engineers, IT professionals, nurses, teachers, physician assistants, and other professions is acute.*

As described above, graduates of this program will possess the analytical and quantitative skills that will be needed in the future to adapt to changing information technologies, the increasing importance of big data, and advancements in techniques such as machine learning and artificial intelligence. By training undergraduate students in the technical skills and tools required to fill the role of analyst in a wide range of organizations, the proposed major will help the state meet its growing workforce needs.

Business analytics is increasingly important for many companies in Nebraska, and the surrounding region, including Bryan Health, Deloitte, Hudl, the Kansas City Chiefs Football Club, Nelnet, and Werner Enterprises, as indicated by the letters of support for the proposed major, which can be found in the appendix. Notably, these letters of support come from companies in a wide variety of industries, representing the wide range of application domains for business analytics. Thus, the proposed major will contribute to meeting the workforce needs of many of the leading employers in the state and region by providing rigorous and comprehensive training in business analytics.

Further, the priority highlights the goal to "Provide each student an experiential learning opportunity with a business, organization, or community." Such an experiential learning experience is built into the proposed major through the inclusion of a capstone project course in which teams of students work as consultants with an industry or community partner to solve a real-world analytics problem. The SCMA Department has a strong history of offering a similar capstone course for its supply chain management majors and the faculty believe strongly that such experiences enhance the employability of our graduates. Further, as new hires within an organization, the capstone experience enables our graduates to contribute more quickly to the achievement of the organization's goals.

C. Consistency with the Comprehensive Statewide Plan for Post-Secondary Education

The proposed program is consistent with and meets the goals outlined in the Comprehensive Statewide Plan for

Postsecondary Education (henceforth referred to as the plan) by the Nebraska Coordinating Commission for Postsecondary Education (CCPE). At a high level, the CCPE would like to make certain that postsecondary education produces graduates who can contribute and succeed in a highly technical world. The proposed major will meet this goal by providing education, training, and workforce development in the field of business analytics.

More specifically, the plan contains the following statements:

- *Institutions will see a growing demand from business and from students for specialized knowledge and skill certifications (in professional, vocational, and technical areas such as information technology) to meet workforce needs.* (Chapter 1)
- *Workers in Nebraska need not only the knowledge, expertise, and technical skills to do their jobs, but also the ability to think critically and creatively in order to advance and succeed in their careers.* (Chapter 3)
- *Institutions in Nebraska are being asked to produce more graduates and trainees in workforce areas of high demand, such as information technology.* (Chapter 3)

As discussed further in Section III.D, the State of Nebraska has significant workforce needs in business analytics and related fields. The proposed major will directly contribute to meeting those needs by providing a comprehensive and coherent post-secondary degree that (1) develops students' technical skills and expertise in the field of analytics, and provides a strong foundation in all aspects of business; (2) instills in students an understanding of the need to think critically, rigorously and creatively when making complex decisions; and (3) provides training in effective communication, including visual, oral and written communications, through the required course on data visualization and communication. Further, the proposed major will be unique in training students to solve a variety of business and societal problems through a unified and coherent approach which recognizes that technical analysis alone is not sufficient to support good decision-making. Thus, the proposed major will combine education in quantitative methods with development of a deep understanding of the business contexts in which those methods will be applied, with the goal of supporting effective decision-making.

The proposed major would also contribute to the goals outlined in the plan in several additional ways, as discussed next.

- Chapter 3 of the plan discusses the need for Nebraska's post-secondary institutions to attract and retain out-of-state students, stating the following goal: *"Effectively recruit and retain more Nebraska students and attract more out-of-state students to Nebraska higher education institutions, especially those students entering targeted career fields that address workforce needs in Nebraska."* The business analytics major would contribute to this goal by offering a high-demand major that will assist the University in recruiting students from across Nebraska and the Midwest regardless of economic status, age, culture, disability, color, national origin, or gender.

- Chapter 2 of the plan discusses the need for Nebraska's post-secondary institutions to recruit and retain a diverse student body, and states that Nebraska institutions should *"Increase efforts to recruit and retain a diverse student body."* The business analytics major would contribute to these efforts. In particular, by demonstrating the broad applicability of analytics techniques to address real-world problems in a wide variety of industries and organization types, including companies, non-profits and government agencies, with the potential to have a real impact on the well-being of society, we anticipate that the major will assist in recruiting students with a wide range of backgrounds, demographics, and career interests.
- Chapter 2 of the plan discusses the importance of experiential learning, stating that post-secondary institutions should *"Incorporate "real world" experience into college curricula through internships, required work experience, volunteer service, exposure to entrepreneurial opportunities, and activities that increase cultural and international awareness."* As discussed previously, the proposed major includes a required experiential learning capstone course that will provide graduates with real-world, hands-on learning experience in the form of company-based projects.

- Chapter 4 of the plan discusses the need for Nebraska's post-secondary institutions to improve efficiency and effectiveness, stating the following goal: *"Higher education in Nebraska will be effective in meeting the needs of students and the state; will be efficient in its expenditure of the state's resources; and will be accountable for developing and sustaining exemplary teaching, learning, research, and public service."* The proposed degree program will contribute to this goal due to its efficient design which leverages existing courses and faculty from across the College of Business, enabling its implementation with the development of relatively few new courses and the hiring of no new faculty.

Next, we consider benchmarking against other universities in the region, as well as UNL's Big Ten peers. As detailed in Section III.E, within the state of Nebraska, business analytics programs exist at Bellevue University, Creighton University, Midland University and University of Nebraska at Kearney. Within the region, similar programs exist at Iowa State University, University of Iowa and University of Kansas, demonstrating that demand for business analytics programs is likely to exist within the state and region.

The table below shows which Big Ten institutions offer undergraduate majors in business analytics. Five of these institutions offer a full major in business analytics, while several others offer minors in related fields, and some offer programs in management information systems. Thus, by creating the business analytics major, UNL can demonstrate leadership among its Big Ten peers and possibly leverage the existence of this major to recruit students from out-of-state, including regionally in states such as Illinois, Minnesota, and Wisconsin.

Business Analytics Programs at Big Ten Universities

Big Ten Institution	Undergraduate Major in Business Analytics	Comment
University of Illinois	No	Major in Information Systems
University of Indiana	Yes	Offered as a co-major
University of Iowa	Yes	
University of Maryland	Yes	
University of Michigan	No	School of Business does not offer majors
Michigan State University	No	Minor in Information Technology
University of Minnesota	No	Major in Management Information Systems
University of Nebraska	No	Minor in Business Analytics
Northwestern University	No	Does not offer undergraduate programs in business
Ohio State University	No	Major in Information Systems
Penn State University	No	Major in Management Information Systems
Purdue University	Yes	
Rutgers University	Yes	
University of Wisconsin	Not	Major in Information Systems

D. Evidence of Need and Demand

1. Evidence of Need:

Organizations of all sizes and types require employees who are capable of translating data into predictive insights that lead to better decision-making. Thus, business analytics is a field undergoing tremendous growth, with the total number of job postings increasing rapidly in recent years. In particular, the Bureau of Labor Statistics predicts up to 20% growth in business analytics jobs between 2021-2031, where the exact forecast depends on functional area, with 19% growth predicted for marketing analytics and 9% for financial analytics, as shown in the table below.

National Occupational Employment Projections - Long Term (2021-2031)

Occupation	**Total Percent Change** (BLS)
Budget Analysts	3%
Management Analysts	11%
Market Research Analysts and Marketing Specialists	19%
Operations Research Analysts	23%
Financial Analysts	9%

Source: U.S. Bureau of Labor Statistics, available at https://www.bls.gov/ooh/business-and-financial/home.htm and https://www.bls.gov/oes/

Within the state of Nebraska, the projected growth rates in analytics-related jobs are similar, as shown in the table below. The table also shows the mean wage by occupation for the state of Nebraska.

Nebraska Occupational Employment Projections - Long Term (2020-2030)

Occupation	**Occupation Code**	**Estimated Employment**	**Projected Employment**	**Total Percent Change**	**Annual Openings**
Budget Analysts	132031	213	225	6%	17
Management Analysts	131111	3694	4224	14%	408
Market Research Analysts and Marketing Specialists	131161	3661	4510	23%	481
Operations Research Analysts	152031	555	695	25%	55

Source: NEWorks, https://neworks.nebraska.gov/ and U.S. Bureau of Labor Statistics https://www.bls.gov/oes/

Among the peer institutions for UNL, as defined by the Comprehensive Statewide Plan for Post-Secondary Education, four universities offer business analytics programs. All of these institutions report statistics on starting salaries on their webpages. Specifically, the University of Iowa reports the starting salary for graduates of its Business Analytics major to be $58,000, while Iowa State University reports $61,045 and the University of Tennessee reports $63,675. The University of Kansas reports a median starting salary of $60,000. When available, reported placement rates are generally in the mid 90%.

Nationally, salaries for business analytics related jobs are also strong. For example, business analytics ranked in the top 10 majors by median salary within five years of graduation, according to the Federal Reserve, where all other majors in top 10 were engineering or computer science (see https://www.cnbc.com/2023/02/20/highest-paying-college-majors.html).

The SCMA Department, along with all other departments within the College of Business, have involved and supportive industrial advisory boards, whose members include both Nebraska-based companies and companies with a significant presence and workforce needs in Nebraska and the surrounding region. As evidence of the need for the proposed undergraduate major in business analytics from the perspective of potential employers for graduates of the program, we have attached to this document letters of support from Bryan Health, Deloitte, Hudl, the Kansas City Chiefs Football Club, Nelnet, and Werner Enterprises. Each of these letters testifies to the current and future need for employees with high-level training and expertise in business analytics.

In 2021, the university contracted with ADV Market Research and Consulting to conduct a market assessment related to data science and closely related fields. The full report is provided in the appendix. One of the key takeaways from this report is the following (quoting directly from the report):

Emerging role of the business translator

- *As noted earlier, one of the key personnel areas of a data science and analytics team is the business translator, who has both technical and domain expertise to be able to translate data insights into business implications.*
- *A data science skillset alone may not be enough to make meaning of the information generated. Business translators, therefore, serve as the link between analytical talent and applications to business questions.*
- *Additionally, as data grows more complex, distilling it and bringing it to life through visualization is becoming critical to help make the results of data analyses digestible for decision makers.*
- *It was estimated that demand for visualization grew roughly 50 percent annually from 2010 to 2015. In many instances today, organizations are seeking data scientist or business translator candidates who can also execute visualizations.*

A graduate from the proposed business analytics major, with comprehensive training in all aspects of business analytics, as well as education in all functional areas of business, and experience in communication regarding data and data analysis (including storytelling, presentation skills and data visualization), will be well-positioned to fill the "business translator" role described above.

As a final demonstration of the need for the proposed major, consider the report entitled "Analytics Career Pathways Task Force White Paper Report," prepared by the Institute for Operations Research and the Management Sciences (INFORMS), which is the largest international association of operations research (O.R.) and analytics professionals, with more than 12,000 members. Given increasing reports of an "analytics talent gap," in 2019 INFORMS appointed a task force to study the magnitude of this gap. The result was a white paper report that documents the current market for analytics, business analytics, and data science positions. As described in the report, the evidence considered included job titles, years of experience, and analytic skills. A copy of that report is provided in the appendix. The report clearly distinguishes between analytics and data science, noting the following (quoting from the report):

- *Analytics is the scientific process of transforming data into insights for the purpose of making better decisions.*
- *Data science is a combination of software and analytics tools used to extract knowledge and insights from data.*
    - *Bowers, Camm, and Chakraborty (2018) did text mining on over 600,000 job descriptions (ads) and found that data science job ads more often mentioned programming and scripting than job ads for analytics or operations research.*
- *Analytics tends to be more problem-centric and data science tends to be more data-centric.*

The following two figures are also taken from the "Analytics Career Pathways Task Force White Paper Report," and show trends in job postings related to analytics and data science between 2010-2019. The blue line on the graph on the left shows the number of job postings that contained the key word "analytics," while the blue line on the graph on the right shows the number of job postings that contained the word "analytics" in the job title.

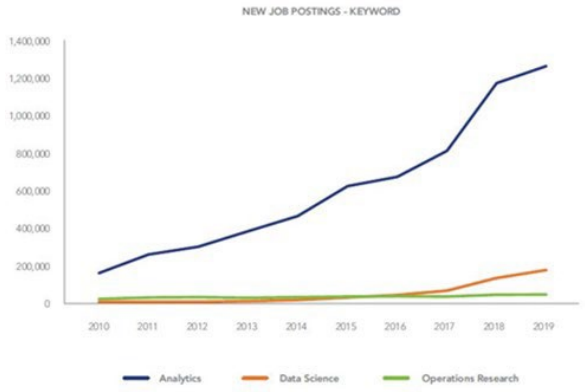


Figure 1: New job postings over time based on a keyword search using Labor Insights™.

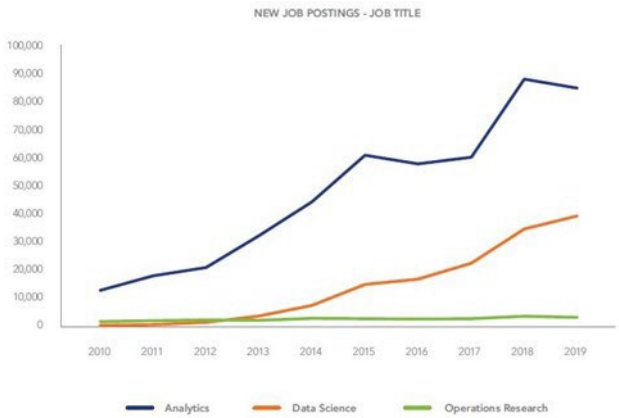


Figure 2: New job postings over time based on a job title search using Labor Insights™.

2. Evidence of Demand:

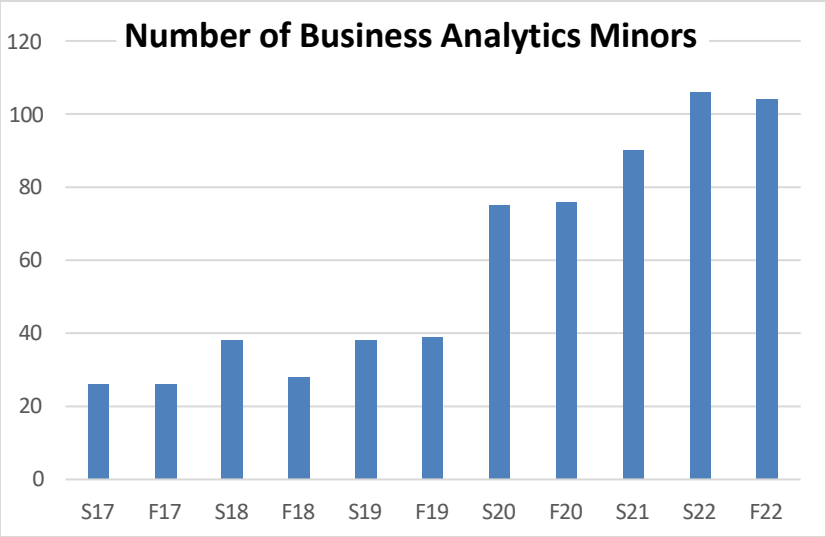
As noted above, in 2021, the university contracted with ADV Market Research and Consulting to conduct a market assessment related to data science and related fields. That report (provided in the appendix) contains a table showing trend data for the average number of degrees per year from 2015-2019 for the fourteen data science-related programs included in their analysis. Two of those programs are 52.1301 (Management Science) and 52.1399 (Management Sciences and Quantitative Methods). These two rows of the table can be considered indicative of the growth in demand for business analytics programs. The table states that these two programs saw growth rates of 32% and 411%, respectively, in terms of number of degrees per year from 2015-2019.

Further, in 2023, Kevin Shriner, Assistant Vice Chancellor for Digital and Online Learning at UNL, conducted a market assessment for business analytics programs at the undergraduate level. The study relied on data from the National Center for Education Statistic's (NCES) Integrated Postsecondary Education Data System (IPEDS). Further, wage estimates were based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). For the purposes of the study, two levels were considered: all degree granting institutions in the United States and all degree granting institutions in Colorado, Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, and Wyoming. The study considered two CIP codes, 52.1301 (Management Science, General) and 30.7102 (Business Analytics), where the latter CIP code was only introduced in 2020. The full market assessment is provided in the appendix.

The key highlights from the market assessment report are as follows (quoting directly from the report):

- *Regional competitors have driven substantial completions since 2017, up 87%, compared to national growth of 44%. In the Big10, this growth is 211%.*
- *Graduates can enter many occupation categories and the opportunities are strong nationally and regionally at a wide array of companies.*
- *There is strong competition for this degree program nationally but there is an opportunity to develop a foothold in the region both on campus and online.*

These trends can be seen locally by observing enrollments in related programs. As noted above, the proposed major in business analytics builds upon the existing business analytics minor, which has grown substantially over the past five years, with more than 100 students enrolled in the fall semester of 2022. The growth in the number of business analytics minors over the most recent 5 years is shown in the graph below.



Finally, as discussed in the letter of support (available in the appendix) provided by Kendra Ritchie, the Associate Director of Recruitment for the College of Business, recruiters for the College of Business have been receiving enquiries regarding business analytics from international students, partly due to the fact that the field of business analytics was recently added to the U.S. Department of Homeland Security (DHS) STEM Designated Degree Program List. Thus, graduates from business analytics programs are eligible for the 24-month STEM optional practical training (OPT) extension. This is a highly attractive feature when recruiting international students since it allows them to extend the time they can stay and work in the United States after graduation. In fact, because of this feature, international students typically show a strong preference for U.S.-based programs that have the STEM certification form the DHS. Further, although the College of Business currently offers a minor in business analytics, DHS does not allow students to use a STEM minor for the purposes of obtaining the OPT extension. Thus, to take advantage of the recruiting benefits associated with STEM-certification to increase enrollments of international students, a full business analytics major is required.

E. Avoidance of Unnecessary Duplication

In assessing the extent to which duplicative programs exist within the state of Nebraska and at UNL, one challenge is the lack of consistency in the labels used for programs related to data analysis, data science, statistics, and quantitative decision-making. Across the country, relevant program titles can include business analytics, data analytics, management science, operations research, quantitative methods, business intelligence, etc. Unfortunately, these labels are not applied in a consistent manner and programs can have substantial differences in objectives, focus and curricula. That said, there can be important differences in the objectives, focus and curricula of these programs. For example, as discussed above, our proposed major focuses on the role of analytics for supporting decision-making in a business context. Therefore, to focus our assessment of the potential for duplication, we reviewed Nebraska-based universities to identify undergraduate programs in business analytics (or equivalent) that are currently offered within a college or school of business. We then reviewed a broader set of programs, including those in data science and statistics, currently offered at UNL.

<u>Existing Programs within the State of Nebraska</u>

Our review of Nebraska-based undergraduate majors in business analytics (or equivalent) that are offered within a college or school of business identified four relevant programs: the major in Business Intelligence and Analytics at Creighton University, the major in Business Analytics at Bellevue University (which is online only), the major in Business Intelligence & Technology at Midland University, and the emphasis in Business Intelligence at the University of Nebraska at Kearney (UNK). We next discuss the programs at Creighton University and UNK, including a comparison to the proposed business analytics major for UNL. We do not discuss the programs at

Midland University and Bellevue University in detail because (1) they are not comparable universities to UNL and (2) those programs include limited credit hours for business foundation courses.

Creighton University
https://catalog.creighton.edu/undergraduate/business/accounting-bia/business-analytics-bs/
Within the B.S. in Business Administration degree, Creighton University has an undergraduate major in Business Intelligence and Analytics with a track in Business Analytics. In addition to the core coursework required for the Business Administration degree, the track consists of 21 credit hours, including five required courses (15 credit hours) and two elective courses (6 credit hours). The required courses place much more emphasis on computer information systems than the coursework in the proposed major for UNL, including courses such as Systems Analysis and Design, Business Application Development, and Python Programming for Data Analytics. The curriculum does not offer courses on the foundational tools in prescriptive analytics, i.e., analytics for decision-making. In particular, the major does not include courses analogous to SCMA 335 (which covers optimization modeling) and SCMA 437 (which covers simulation modeling and decision analysis), both of which are required for the proposed major for UNL. Thus, like many analytics programs offered by colleges other than business, this program does not appear to emphasize the role of analytics in supporting business decision-making. Finally, for many students from the state of Nebraska, the tuition required to attend Creighton University would be prohibitive, making a business analytics major offered by UNL a more viable option for those students.

University of Nebraska at Kearney
https://catalog.unk.edu/undergraduate/departments-programs/cyber-systems/business-administration-comprehensive-business-intelligence-emphasis-bs/
https://www.unk.edu/academics/csit/programs/management-information-systems.php
The College of Business and Technology at UNK offers a Business Intelligence emphasis within the B.S. in Business Administration, where the emphasis requires about 27 credit hours in analytics content, and thus appears to be analogous to a major. The emphasis is offered by the Department of Cyber Systems. In addition to the core coursework required for the Business Administration degree, the emphasis consists of 27 credit hours, including six required courses (18 credit hours) and three elective courses (9 credit hours). The required courses focus on computer information systems, descriptive analytics and predictive analytics, including courses such as Predictive Modeling, Systems Analysis and Design, Big Data Visualization, Database Systems and Cyber Systems Capstone. On the other hand, the curriculum offers few courses on the foundational tools in prescriptive analytics, i.e., analytics for decision-making, with one relevant course (Operations Research) offered as an elective. Thus, like many analytics programs offered by colleges other than business, this program does not appear to emphasize the role of analytics in supporting business decision-making.

Finally, in terms of undergraduate business analytics programs on other campuses in the University of Nebraska system, the University of Nebraska Omaha (UNO) offers an undergraduate concentration in business analytics through the Department of Economics within the College of Business Administration. That program requires introductory courses in applied algebra and optimization, macro- and micro-economics, business statistics, econometrics, database management, and business intelligence. In addition, students select from one to three elective courses from a set of options that span the various functional areas of business. Since this program is a concentration, compared to the proposed major in business analytics at UNL, it requires fewer courses in the area of analytics. Specifically, in addition to the College of Business core courses, which include macro- and micro-economics, business statistics and business analytics/information analysis, the proposed major at UNL consists of six required courses on analytics, plus two elective courses from the various functional areas of business. Further, although the concentration in business analytics at UNO has been offered for some time, as discussed in Section III-D of this proposal, there still exists significant need and demand for analytics training. Thus, given the robust enrollments at both colleges of business, along with the significant recent growth in the demand for analytics

training, we believe there is sufficient student interest to support and sustain programs at both UNL and UNO. Finally, we envision that these two programs would be synergistic in the sense that individuals with undergraduate degrees from one program may choose to pursue graduate degrees. Note that UNO offers an MBA with a concentration in business analytics, while UNL offers the MBA concentration, as well as an M.S. in Business Analytics.

Existing Programs Currently Offered at UNL

Currently, UNL offers two majors that are related to, but distinct from, business analytics. The Department of Statistics offers a statistics and data analytics major, while an interdisciplinary data science major is offered jointly by the College of Arts and Sciences, College of Agricultural Sciences and Natural Resources and College of Engineering. In addition, the Department of Mathematics has a Statistics and Data Science option for math majors. Since this option consists of four courses, it is the equivalent of a minor.

The undergraduate major in statistics and data analytics is relatively new, first being offered in Fall 2022. This major requires significant coursework in mathematics as prerequisites, including Calculus I, II and III, as well as linear algebra. In contrast, the College of Business requires either MATH 104 (Applied Calculus) or MATH 106 (Calculus I) as a prerequisite, and our curriculum in business analytics is designed for students with that level of mathematical background. Thus, while we teach applied statistics in several courses at the 200-, 300- and 400-level, we do not teach probability theory or mathematical statistics. In contrast, the statistics and data analytics major also includes advanced courses in probability, statistical analysis, mathematical statistics, statistical computing, data wrangling, study design, model selection and prediction, and statistical collaboration. Finally, unlike the proposed business analytics major, the statistics and data analytics major does not include course work in topics related to decision-making or prescriptive analytics, such as optimization or simulation, or provide any exposure to business analytics applications in each of the functional areas of business and economics.

The undergraduate major in data science is also a new major, starting in Fall 2023, and provides students with an interdisciplinary education in data science. According to the proposal for the major, the required courses include a set of core courses in computer science, statistics, and mathematics. As noted in the proposal, "[t]hese courses will provide a strong foundation for students to pursue more advanced courses at a later stage of their Data Science degree program, in particular: computational thinking, fundamental programming skills, data structures, algorithm development and evaluation, statistical analysis, mathematical thinking, calculus, and linear algebra." Thus, while the statistics and data analytics major provides in-depth education in mathematics and statistical theory, the data science major provides significant training in computing and programming. In contrast, the proposed business analytics major will place heavy emphasis on software tools used commonly in industry, such as Excel, Tableau, SQL, and Oracle Crystal Ball. While the business analytics major will require students to learn programming, developing significant capabilities in programming is not its goal. Instead, the business analytics major will leverage user-friendly programming languages to enable business students to perform more advanced statistical analysis than what can readily be performed in software such as Excel or Tableau. For example, our instruction in the business analytics minor currently relies on the R programming language, which is commonly used for statistical computing and graphics (however, as discussed above, we anticipate that the relevant languages and tools will evolve over time and our coursework is not reliant on any specific language). Finally, in addition to the core coursework in computer science, mathematics and statistics, students completing the data science major can select one or two focus areas from the following list: artificial intelligence, software development, data pipeline, mathematical modeling, statistical modeling, journalism and humanities, sociology, and natural resources. These options allow students to customize their major to either the application domain or methodological approach of their choosing.

While we are excited to see the introduction of these two existing majors at UNL, we believe a gap still exists in

the analytics programs offered by UNL. As noted, the existing majors are focused on quite technical instruction in mathematics, statistics and/or computing, which is not appropriate for all students and all majors. Further, the substantial coursework requirements in these technical areas implies that fewer credit hours are available for students to study a particular application area, such as business. In contrast, within the College of Business, we seek to train graduates who have the necessary skills and knowledge to solve the problems faced by businesses and other organizations, by combining their robust understanding of the application domain with skills in data analysis, quantitative methods, and computing. At the undergraduate level, it would be difficult to combine the technical expertise developed by the statistics and data analytics and data science majors with a comprehensive and in-depth education in the field of business offered by the B.S. in Business Administration, thus creating a need for the business analytics major within the College of Business.

Next, we highlight what we see as the unique curricular aspects of the proposed business analytics major.

- First, the proposed business analytics major will require all students to complete the same foundational coursework in business subject areas that is required for all students graduating from the University of Nebraska-Lincoln College of Business with the Bachelor of Business Administration degree. Thus, students in the proposed business analytics major must take 23 credit hours of College of Business Foundation Courses in areas such as accounting, economics, statistics, and business writing, and further must take 18 credit hours of College of Business Intermediate Core Courses in areas such as management, marketing, finance, and operations and supply chain management. Any post-secondary analytics-related degree program that is not offered within a college of business would necessarily be lacking in this foundational coursework and thus would not be duplicative of the proposed business analytics major.
- Second, the major will be unique in training students to solve a variety of business and societal problems through a unified and coherent approach which recognizes that technical analysis alone (including training in data manipulation, statistics, machine learning, and associated software and programming languages) is not sufficient to support good decision-making, particularly for the types of complex, large scale problems that are typically encountered in business, non-profits, government agencies and other organizations. Indeed, an understanding of the decision-making context is critical at every stage of the analytical decision-making process. For example, before even collecting data, a decision-maker must understand the nature of the decision to be made and the type of information that will be relevant and useful when making that decision. Further, the nature of the decision can range from tactical (short term) to operational (medium term) to strategic (long term). Understanding that distinction is critical when designing the data collection and analysis, and when selecting the appropriate prescriptive modeling approach to support decision-making. For example, the best way to define, measure and model risk and uncertainty will necessarily differ for short- and long-term problem contexts.

- Third, the statistics and data analytics and data science majors also lack education in the methods and tools used for prescriptive analytics. In contrast, business analytics teaches students that an estimate, prediction, or forecast is not a decision, but rather just one input into the decision-making process. Once data is collected and analyzed to provide insights into past behavior and predictions for the future, those insights and predictions must be input into a prescriptive model to support decision-making. Prescriptive analytics approaches include mathematical programming, decision analysis and system simulation, all of which are taught in the proposed business analytics major. These modeling approaches can be used to formulate structured and rigorous models of a decision-problem, including all relevant objectives (which can include costs and revenues, as well as non-monetary objectives) and constraints or limitations. In many cases, the process of building the prescriptive model provides useful insights to the decision-maker regarding their decision problem because it forces the decision-maker to think about their problem in a structured and rigorous manner. Further, once a model is developed and solved to provide an "answer," the decision-making process is not complete. Instead, the model can be solved and re-solved under varying conditions, i.e., sensitivity analysis can be performed, to understand the impact of changing environments or alternative

business scenarios on the "answer," and to allow the decision-maker to consider complex trade-offs and balance multiple objectives. These results can be invaluable to the end-customer of the analysis, i.e., the individual responsible for making the final recommendation for action.

Finally, we highlight the difference between how data analysis and quantitative techniques will be taught to business analytics students, compared to how they are typically taught to students studying statistics or data science. To do so, we provide information on the content of three of the required courses for the proposed business analytics major.

SCMA 335: Decision Making Models

- This course covers the use of optimization modeling in business decision problems, i.e., it is a course on prescriptive analytics. Students completing the course learn how to apply optimization modeling as a quantitative solution technique and how to use the results of this solution technique to support business decision-making. The emphasis is on formulating different types of optimization problems and selecting the correct quantitative techniques to solve these problems, with implementation in Excel. The course covers a variety of problems from operations, transportation, finance, and marketing. The main topics include linear programming, sensitivity analysis, distribution and network models, and integer linear programming.

- SCMA 335 is taught in a manner that is appropriate for business students. For example, students do not learn the details of the simplex algorithm, which would be covered in an analogous course found in an engineering or math department. The course also relies on spreadsheet models rather than using more advanced software or programming. However, students learn and implement the graphical solution method for small scale problems so that they can understand how the problem constraints shape the feasible region and how the objective function determines the optimal solution given the feasible region. Based on this knowledge, students are able to understand how to use sensitivity analysis output to interpret changes in the optimal solution. Students from different backgrounds and majors in the College of Business have successfully taken the course. The course and instructor consistently receive strong student evaluations. Students can enroll in the course after completing Math 104 (Applied Calculus) and ECON 215 (Statistics), which provide sufficient background in mathematics.

SCMA 451: Introduction to Predictive Analytics

- This course covers concepts and tools for data analysis, modeling, and information technology. The course teaches students to develop predictive models and to use those models to support business decision-making. The course provides tools appropriate for various business application domains working with data, databases, and reports from analytic models. It covers the fundamentals of data analysis, training, and testing models, and making predictions, using R programming and RStudio. Students learn to assess which predictive modeling techniques would be most appropriate for different types of problems that can emerge in business applications. Students learn how machine learning is used for training regression models, classification and regression trees, and artificial neural network models in a business context, and assess their practicality and interpretability in addition to their predictive performance.

- SCMA 451 is taught in a manner that is appropriate for business students. For example, on the topic of neural networks, students learn concepts about the model structure and the complexities associated with the black box nature of these models in practice. They also experience computational difficulties in training neural networks with a large number of input variables and hidden nodes and/or layers. However, the algorithmic details of feed forward or backward propagation are not covered. The course has been taken successfully by students from all business majors, as well as students majoring in economics. The course and instructor consistently receive strong student evaluations. Students can enroll in the course after completing Math 104 (Applied Calculus), ECON 215 (Statistics) and SCMA 350 (Business Analytics/ Information Analysis), which provide sufficient background in mathematics and statistics.

SCMA 453: Machine Learning Applications for Business Analytics

- This course covers concepts and tools used for data exploration, data visualization and data mining, to support humans in identifying actionable information from large amounts of data. The course teaches the process of machine learning and data mining in the context of business applications. Methods covered include association rules, collaborative filtering, and cluster analysis techniques. These methods will be implemented using relevant computer software. In addition to unsupervised learning techniques and other machine learning concepts will be introduced conceptually.

- SCMA 453 will be taught in a manner that is appropriate for business students. Machine learning concepts and techniques will be introduced in the context of analytics projects in businesses. After reviewing data acquisition, storage and processing techniques, using structured and unlabeled data sets, students will learn widely used unsupervised machine learning algorithms and their business applications, such as exploratory data analysis for cross-selling, customer segmentation, and image recognition applications in a business context. For example, students will learn association rules and market basket analysis to understand customer purchasing patterns. While students will learn some technical content related to generating rules when the apriori algorithm is used, emphasis will be placed on interpretation of results to be used in recommendation systems for businesses. Further, the course will not cover topics such as the space and computational time complexities of rule mining and clustering algorithms. Students can enroll in the course after completing Math 104 (Applied Calculus), ECON 215 (Statistics) and SCMA 350 (Business Analytics/ Information Analysis), which provide sufficient background in mathematics and statistics.

In summary, the proposed business analytics major will be unique in the state of Nebraska and at UNL in combining a rigorous yet accessible education in data analysis and quantitative methods with the development of a deep understanding of the business context in which those methods can be applied, with the goal of supporting effective decision-making in all industries and sectors of the economy.

F. Adequacy of Resources:

1. Faculty/Staff

   Existing faculty within the College of Business will support this new degree program; no additional faculty are required. The program faculty includes faculty from the Department of Supply Chain Management and Analytics, as well as faculty from other departments within the College of Business who teach the business core fundamentals courses required for the program. A list of faculty who currently teach courses that will be used as part of the proposed business analytics major is provided below. Curriculum vitae (CVs) for these faculty are included in Section IV.

   - Ozgur Araz, Ph.D., Professor, Department of Supply Chain Management and Analytics
   - Demet Batur, Ph.D., Associate Professor, Department of Supply Chain Management and Analytics
   - Esma Gel, Ph.D., Associate Professor, Department of Supply Chain Management and Analytics
   - Jonathan L. Hendricks, Ph.D., Assistant Professor, Department of Management
   - Priyanka Khandelwal, Ph.D., Assistant Professor of Practice, Department of Marketing
   - Yanxin Liu, Ph.D., Assistant Professor, Department of Finance
   - Majid Nabavi, Ph.D., Associate Professor of Practice, Department of Supply Chain Management and Analytics
   - Brenden Timpe, Ph.D., Assistant Professor, Department of Economics
   - Federico Zincenko, Ph.D., Assistant Professor, Department of Economics

   In addition to the faculty listed above, the SCMA Department currently consists of 13 tenured or tenure-track faculty and three professors of practice. While some of those faculty do not currently teach courses

included in the proposed major (for example, because their current teaching assignments are courses required for the supply chain management major or course that support the College of Business core curriculum), all these faculty are capable of teaching courses that are part of the proposed business analytics major.

The SCMA Department would assign current SCMA faculty to teach the new courses required for the major. As noted, several SCMA faculty are highly qualified to teach each of those courses. To cover the courses that the assigned faculty are currently teaching, the SCMA Department would leverage its PhD students. The SCMA PhD program is relatively new, having been launched in the 2022-2023 academic year. By the time the major is implemented, the SCMA Department will have PhD students who have achieved ABD status and thus are eligible to teach courses as instructor of record. This is new teaching capacity that the SCMA Department did not previously have but was created by a previous commitment from the College of Business to provide funds to support the new PhD program. Because teaching experience is vital for business PhD students on the academic job market, these teaching assignments will be an integral and important part of the education and training of the SCMA PhD students.

2. Library/Information Resources

No additional library or information resources are necessary to support the proposed new business analytics major. The UNL Libraries have ten locations across the UNL campuses, providing access to books, online databases and academic journals, as well as librarians who are available to work with students on research and coursework. The main UNL library is Love Library on City Campus, which is available for use by all College of Business faculty, students and staff, and provides a liaison to assist individuals from the College of Business. In addition, ScienceDirect, a full-text scientific database offering journal articles and book chapters from peer reviewed books and journals, can be accessed through UNL Libraries. Further, College of Business faculty, students and staff have access to a wide range of business-related databases through a subscription to Wharton Research Data Services (WRDS). All current College of Business faculty, staff and students are eligible for web access to WRDS using the computers in the College of Business Computer Lab. A number of other databases are available to College of Business faculty and staff, including BoardEx, SeekEdgar, SDC Platinum, Datastream and Gallup World Poll.

3. Physical Facilities and Equipment

No additional physical facilities or equipment are necessary to support the major in business analytics.

4. Instructional Equipment and Informational Resources

No additional instructional equipment and informational resources are required.

5. Course and Lab Fees

A $40 course fee is assessed on SCMA437, an existing business analytics course. The fee covers the cost of software used for the course. By charging the course fee, the SCMA Department can aggregate the software license purchases across two courses (one undergraduate and one graduate) to obtain a quantity discount.

6. Budget Projections

Please see the budget tables, Tables 1 and 2. These files contain enrollment, cost and revenue projections for the first five years of the program. The proposed program would be taught using existing faculty from the Supply Chain Management and Analytics Department and the College of Business. The proposed degree

will be managed using existing administration, recruiting and advising staff in the Business Advising and Student Engagement office.

IV. Appendix

A. Catalog Copy

B. Dean and Department Chairs Letters of Support

C. Industry Letters of Support

D. Student Letters of Support

E. ADV Market Research Report for Data Science

F. Analytics Career Pathways Taskforce Report

G. AVC for Digital and Online Learning Market Analysis for Business Analytics

H. Kendra Ritchie Letter

I. CVs for Faculty who Teach Courses Included in Proposed Major

J. Syllabi for Courses Included in Proposed Major

TABLE 1: PROJECTED EXPENSES - NEW INSTRUCTIONAL PROGRAM

	(FY 24) Year 1		(FY 25) Year 2		(FY 26) Year 3		(FY 27) Year 4		(FY 28) Year 5		**Total**	
Personnel	**FTE**	Cost	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	**FTE**	**Cost**
Faculty [1]	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Professional [2]	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Graduate assistants	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Support staff	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Subtotal	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Operating												
General Operating [3]												$0
Equipment [4]												$0
New or renovated space [5]												$0
Library/Information Resources												$0
Other [7]												$0
Subtotal		$0		$0		$0		$0		$0		$0
Total Expenses	0	$0.00	0	$0.00	0	$0.00	0	$0.00	0	$0.00	**0**	**$0.00**

[1] No new faculty are proposed at this time. Existing CoB faculty will teach the courses in the program. If the size of this program grows larger than expected, we may need to hire a new faculty member to support the program.

[2] No new full-time equivalent professional staff needed to implement and maintain the program.

[3] No additional expenses are projected for this program.

[4] No new equipment necessary for the implementation and/or operation of the program.

[5] No new space is needed for this program.

TABLE 2: REVENUE SOURCES FOR PROJECTED EXPENSES - NEW INSTRUCTIONAL PROGRAM

	FY(24) Year 1	(FY 25) Year 2	(FY 26) Year 3	(FY 27) Year 4	(FY 28) Year 5	**Total**
Reallocation of Existing Funds						$0
Required New Public Funds						$0
1. State Funds						$0
2. Local Tax Funds (community colleges)						$0
Tuition and Fees	$90,780	$100,810	$178,190	$224,690	$286,810	$881,280
Other Funding						$0
1						$0
2						$0
3						$0
Total Revenue [5]	$90,780	$100,810	$178,190	$224,690	$286,810	$881,280

	FY(24)		(FY 25)		(FY 26)		(FY 27)		(FY 28)	
	Year 1		Year 2		Year 3		Year 4		Year 5	
Student Type	R	NR	R	NR	R	NR	R	NR	R	NR
Est. Tuition and fees per student	$8,740	$27,910	$7,810	$30,880	$7,810	$30,880	$7,810	$30,880	$7,810	$30,880
Total Enrollment projections	30		35		45		55		65	
Est. New Enrollment in Major	6		7		11		14		19	
Est. New Enrollment - Student Type	4	2	5	2	7	4	9	5	13	6
Est. New Tuition and Fees	$34,960	$55,820	$39,050	$61,760	$54,670	$123,520	$70,290	$154,400	$101,530	$185,280
Total Est. New Tuition and Fees	$90,780		$100,810		$178,190		$224,690		$286,810	

Overall New Total Tuition and Fees **$881,280**

Appendix A: Catalog Copy

University of Nebraska Lincoln
College of Business Office of the Dean
730 N. 14th Street, HLH 301 | PO Box 880405 | Lincoln, NE 68588-0405 | 402.472.9500
business.unl.edu

College of Business College Degree Requirements

Note: Shared Pages are not published. Shared page content must be imported to other pages.

COLLEGE REQUIREMENTS

College Admission

The entrance requirements for the College of Business (CoB) are the same as the University of Nebraska–Lincoln General Admission Requirements.

Admission Deficiencies/Removal of Deficiencies

Students admitted to the College of Business with core course deficiencies are advised to remove these deficiencies as soon as possible.

College-level coursework taken to remove deficiencies MAY NOT be used to meet degree requirements in the College.

Honors Program

Nebraska Business Honors Academy

The Nebraska Business Honors Academy is a unique cohort-based program for high-ability students with demonstrated leadership potential. The goal of the Academy is to develop critical thinking, problem-solving, and communications skills to prepare graduates to be strategic decision-makers and innovators. The Academy combines a rigorous curriculum (including approximately 40 credit hours of cohort-based courses) with leadership training, co-curricular activities, and corporate involvement. Nebraska Business Honors Academy requirements differ from those listed in the catalog. Students work closely with the Academy's advisors on appropriate sequencing and enrollment in Academy-specific requirements.

Jeffrey S. Raikes School of Computer Science and Management

The purpose of the Jeffrey S. Raikes School of Computer Science and Management is to produce unique graduates who combine business knowledge and computing fundamentals for enterprise information and software systems. Graduates will be professionals who understand the multiple levels of new information systems and who become the technology sector's innovators, product developers, entrepreneurs, chief information officers, and CEOs. Students interested in learning more about the Jeffrey S. Raikes School of Computer Science and Management program and curriculum requirements (which may differ from those listed here) are encouraged to call 402-472-6000 or visit the Jeffrey S. Raikes program website. Students may also reference the Jeffrey S. Raikes School of Computer Science and Management catalog section under Academic Programs and Policies.

College Degree Requirements

Overview of College Degree Requirements

The curriculum requirements for the College consist of coursework in three areas. All coursework (except electives and where otherwise noted) must be taken for a grade.

1. Non-Business Requirements (NBR)

Consist primarily of College and University ACE (Achievement-Centered Education) coursework

2. Business Core

Foundation (BCF), (includes ACE 6)
Intermediate (BCI), (includes ACE 8)
Advanced-Major (BCA-M)
Advanced-Capstone (BCA-C), (ACE 10)

3. Electives

Non-Business Requirements (NBR)

(Most of the ACE requirements)

Eight Courses (normally 24-26 hours)

All students in the College of Business will take the following non-business courses (unless otherwise noted).

While NBR 1, 2, 7, and 8 identify specific ACE options to choose from or identify an ACE course specifically required for the College, NBR 3, 4, 5, and 6 allow students to select courses according to their personal interests (and meet ACE 4, 5, 7, and 9).
Most students will take coursework to fulfill these requirements during the freshman/sophomore year. However, if hours are still needed during the junior/senior year, there may also be options to 'double count' coursework for NBR 3 (ACE 4) and/or NBR 6 (ACE 9) toward the major (BCA-M) or a minor. This is likely to be of most benefit to 'transfer-in students' due to the nature of the program and when ACE requirements are traditionally taken.

All coursework for NBR must be taken for a grade.

NBR 1: Written Communication (ACE 1)

Choose ONE of the following:

ENGL 150 Writing and Inquiry
ENGL 151 Writing and Argument

Students should refer to the course descriptions to select the **one** course best suited to individual interests. While several communication courses may be selected to fulfill the University ACE 1 outcome, **one** of the above is a specific requirement for the College of Business and will fulfill both requirements with one course. ENGL 150 and ENGL 151 are primarily restricted to first- and second-year students. Upperclass students who have not completed one of these options should take ENGL 254 Writing and Communities as a substitute.

NBR 2: Mathematical, Computational, Statistical or Formal Reasoning Skills (ACE 3)

Choose ONE of the following:

MATH 104 Applied Calculus

MATH 106 Calculus I
Any advanced calculus course above the 106 level

Notes regarding the selection of coursework for NBR 2 (ACE 3):

Credit cannot be given for both MATH 104 and MATH 106 . Students must determine the appropriate course early in their program.

A first-semester student's score on the Math Placement Exam will determine eligibility for MATH 104 or MATH 106. The student should select between these classes based on the following sets of circumstances:

Actuarial science majors **MUST** take MATH 106 (or a higher-level calculus).

Actuarial science majors will also take MATH 107 Calculus II and MATH 208 Calculus III and either CSCE 101 Fundamentals of Computer Science and CSCE 101L Fundamentals of Computing Laboratory or CSCE 155A Computer Science I.

Raikes students MUST take MATH 106 and MATH 107 (or a higher-level calculus).

MATH 106 (or higher calculus) is **strongly encouraged** for those students majoring in accounting, majoring in finance, majoring in economics, or considering graduate school.

While several courses may be selected to fulfill the University ACE 3 outcome, one of the above is a specific requirement for the College of Business and will fulfill both requirements with one course.

Freshman students who place below MATH 104 on the Math Placement Exam may want to consider summer school in order to maintain their sequence of courses.

Math Placement Exam (MPE)

Students admitted to the College of Business are required to take a Math Placement Exam prior to enrolling in the college math requirement of MATH 104 or MATH 106 (or higher math).

The results of this examination determine which math course students will enroll in their first semester on campus.

The Math Placement Exam may be retaken if a student feels that they are able to test into a higher level course.

Students lacking sufficient high school preparation in math may need to enroll in equivalent high school preparatory courses, as will be determined by the MPE.

Preparatory courses should be taken as soon as possible to avoid future sequencing problems.

Additional information about the exam can be found on the Math Placement website.

Whether required to enroll in preparation coursework first, as indicated on the MPE (MATH 100A Intermediate Algebra, MATH 101 College Algebra and/or MATH 103 College Algebra and Trigonometry), or in one of the required courses, it is critical to begin math the first semester on campus.

NBR 3: The Study of Scientific Methods and Knowledge of the Natural and Physical World (ACE 4)

Choose one course from ACE 4 Certified Courses. (Course credit will vary between 3-4 credit hours.)

Agribusiness majors – NBR 3 (ACE 4) – AGRI 115 Biotechnology: Food, Health and Environment; PLAS 100 Plants, Landscapes, & the Environment; PLAS 131 Plant Science; ENTO 115 Insect Biology; AGST 109 Physical Principles in Agriculture and Life Sciences; NRES 108 Earth's Natural Resource Systems Laboratory; PLPT 110 Fantastic Fungi - The Fatal and the Friendly may be taken to fulfill the science requirement (NBR 3–ACE 4) as well as a requirement for the major (BCA-M).

NBR 4: Study of Humanities (ACE 5)

Choose one course from ACE 5 Certified Courses.

International business majors – NBR 4 (ACE 5) – FREN 301 Survey of French Literature, FREN 302 Themes in French Literature, RUSS 301 Russian Cultural Studies, RUSS 302 Studies in Russian Culture and Film, RUSS 482 Russian Literature in Translation, RUSS 483 Russian Secular and Political Folklore, SPAN 305 The Analysis of Communication in Spanish, SPAN 314 Ecological Imagination in Hispanic Culture, SPAN 315 Gender and Sexuality in Hispanic Culture, SPAN 331 War and Human Rights in Latin America may be taken to fulfill NBR 4–ACE 5 as well as a requirement for a language minor or toward the major language requirement.

NBR 5: Study of the Arts to Understand Their Context (ACE 7)

Choose one course from ACE 7 Certified Courses.

NBR 6: Global Awareness or Knowledge of Human Diversity Through Analysis of an Issue (ACE 9)

Choose one course from ACE 9 Certified Courses.

Students enrolling for their first semester with junior standing (or more) will see that the list of approved courses includes a few business courses. While this section is labeled "non-business requirements," students may elect to enroll in one of the business courses to fulfill the ACE 9 requirement as long as prerequisites are completed (which are generally reserved for juniors or seniors). Work closely with your advisor and bring this to their attention to question how this course may potentially satisfy other degree program requirements, including in major.

The options include:

Actuarial science majors – must complete an International Business Course as part of the degree requirements. Actuarial science majors may choose to take ECON 321 Introduction to International Economics to fulfill the IBCR as well as the global awareness requirement (NBR 6–ACE 9).

Agribusiness majors – AECN 220 International Agricultural Trade, AECN 346 World Food Economics, AECN 367 Agricultural Development in Developing Countries, AECN 420 International Food and Agricultural Trade, AECN 425 Agricultural Marketing in a Multinational Environment, AGRI 282 Introduction to Global Agricultural and

Natural Resources Issues, ENSC 110 Energy in Perspective, or PLAS 200 Landscape and Environmental Appreciation may be taken to fulfill the global awareness requirement (NBR 6–ACE 9) as well as a requirement for the major.
Business administration majors – ECON 321 or MNGT 414 International Management may be taken to fulfill the global awareness requirement (NBR 6–ACE 9) as well as a requirement for the major. (ECON 321 and MNGT 414 are also IBCR course options.)
Economics majors – ECON 321 may be taken to fulfill the global awareness requirement (NBR 6–ACE 9) as well as a requirement for the major. (ECON 321 is also an IBCR option).
International business majors – BSAD 320 Global Issues, BSAD 420 Global Leadership and the Culture Map, ECON 321 or MNGT 414 may be taken to fulfill the global awareness requirement (NBR 6–ACE 9) and may fill a requirement for the major. (They are also IBCR options.)
Management majors – MNGT 365 Managing Diversity in Organizations or MNGT 414 may be taken to fulfill the global awareness requirement (NBR 6–ACE 9) and may be able to fulfill a requirement for the major/minor depending on the option selected. (MNGT 414 is also an IBCR option.)
Supply chain management majors – ECON 321 may be taken to fulfill the global awareness requirement (NBR 6–ACE 9) as well as a directed elective for the major. (ECON 321 is also an IBCR option).
An alternative to the above options is allowance of the course to count for NBR 6–ACE 9 and the associated minor—but only one or the other (major OR minor).

In any of the above instances where double counting is an option, only 3 hours of credit are awarded; students will still need to meet the 120 hours for graduation. Any course that is used for both an ACE requirement and a first major requirement is not allowed to be used towards the completion of the 300/400 upper-level requirement.

NBR 7: Business Communication (ACE 1)

BSAD 220 Business Writing

This is a business writing course that requires sophomore standing and ENGL 150 or ENGL 151 as prerequisites. While it is also an ACE 1 course, as is ENGL, **BOTH** are specific requirements for the College of Business.

NBR 8: Oral Communication Skills (ACE 2)

Choose one course from:

MRKT 257 Sales Communication

COMM 286 Business and Professional Communication

Due to the importance of this requirement to the business curriculum, the College recommends taking this course on campus.

While several other courses may be selected to fulfill the University ACE 2 requirement, COMM 286 or MRKT 257 is a specific requirement for the College of Business.

NOTE: In the selection of coursework for any of the above NBR's, the term *prerequisite*, when stated anywhere in this catalog, means coursework that MUST BE COMPLETED to enroll in the class. Concurrent enrollment in any identified prerequisite(s) is NOT permitted unless so indicated in the course description.

Business Core – Four Sections (approximately 62-74 hours)

Business Core Foundation (BCF) – 18 hours

Business Core Intermediate (BCI) – 18 hours

Business Core Advanced–Major (BCA-M) – Hours vary from 21-33 hrs

Business Core Advanced–Capstone (BCA-C) – 3 hours + 0 hour assessment

The foundation and intermediate courses are designed to expose students to the various business disciplines. The advanced courses are those courses identified for each of the eleven majors, and the capstone course is taken in the final semester of the program. All coursework for the Business Core (except where noted differently) must be taken for a grade.

Professional Enhancement Program (PrEP) (4 hours)

Designed to develop confident, professional, and polished business students positioned for lifelong career success, the PrEP program consists of four required 1-hour courses. These courses are labeled BSAD 111 PrEP I, Investing in Strengths; BSAD 222 PrEP II, Career Development and Planning; BSAD 333 PrEP III, Internship and Job Search Strategies; BSAD 444 PrEP IV, Professional and Life Skills, and are offered across the four-year curriculum as part of the Business Core requirements.

Business Core Foundation (BCF) – Nine Courses (18 hours)

All students in the College of Business will take the following courses (unless otherwise noted).

All coursework (except BSAD 50, BSAD 111, and BSAD 222) must be taken for a grade. Raikes students are exempted from these courses.

BCF 1 – BSAD 111 PrEP I, Investing in Strengths

BSAD 111

1-credit-hour course (*offered Pass/No Pass only*).

Required of all new freshmen.

Taken as a freshman (*preferably first semester*).

BSAD 111S

0-credit-hour course, available exclusively to transfer students (*offered Pass/No Pass only*).

Required of all on- and off-campus transfer students.

Taken as soon as possible upon transfer into the college (*preferably first semester*).

BCF 2 – BSAD 50 Business Computer Applications

0-credit-hour course (*offered Pass/No Pass only*).

Offered twice per semester and should generally be taken in the **FIRST seven weeks of semester two**. It is a prerequisite for ECON 215, which is normally taken in the fall of the second year.

Required basic-skills computer course that uses Microsoft Access, Word, PowerPoint, and Excel.

BCF 3 – SCMA 250 Spreadsheet Analytics

1-credit-hour course.

ECON 215 Statistics is a prerequisite or may be taken concurrently.

BCF 4 – ACCT 201 Introductory Accounting I and ACCT 202 Introductory Accounting II

ACCT 201

Sequential; take ACCT 201 first.

Prerequisite: 2.5 cumulative GPA; sophomore standing, (or freshman standing, with 14 credit hours of college credit and MATH 104 or MATH 106 with a grade of C or better).

ACCT 202

Sequential; take ACCT 202 following completion of ACCT 201.

Prerequisite: 2.5 cumulative GPA; Sophomore standing, (or freshman standing with 14 hours of University of Nebraska-Lincoln credit and MATH 104 or MATH 106 with a grade of C or better); ACCT 201 with a grade of C or better.

Grade of C or better in prerequisites is normally required for accounting courses.

BCF 5 – ECON 211 Principles of Macroeconomics and ECON 212 Principles of Microeconomics (ACE 6)

Not sequential.

Prerequisite: Completion of 12 hours of college coursework.

BCF 6 – ECON 215 Statistics (ACE 3)

Prerequisites: Sophomore standing; MATH 104 or MATH 106; BSAD 50; and a 2.5 GPA.

Must take ECON 215 (not STAT 218 Introduction to Statistics nor EDPS 459 Statistical Methods nor CRIM 300 Applied Statistics and Data Processing in the Public Sector nor SOCI 206 Introduction to Social Statistics).

Actuarial science majors MUST take STAT 380 Statistics and Applications instead of ECON 215; will also take STAT 462 Introduction to Mathematical Statistics I: Distribution Theory and STAT 463 Introduction to Mathematical Statistics II: Statistical Inference.

Economics majors or minors can take STAT 380 instead of ECON 215.

BCF 7 – BSAD 222 PrEP II, Career Development and Planning

1-credit-hour course (o*ffered Pass/No Pass only*).

Prerequisites: Major in College of Business; sophomore standing; and a 2.5 GPA.

Taken as a sophomore.

Business Core Intermediate (BCI) – Six Courses (18 hours)

Prerequisites for the BCI courses include MATH (NBR2), ACCT 201, ACCT 202, ECON 211, ECON 212, ECON 215, BSAD 220, and a 2.5 GPA.

Required of all business students regardless of major (except where noted under individual courses).
Enrollment in BCI normally occurs during the sophomore and junior years.
All coursework must be taken for a grade.
Sequence with the following recommendations/restrictions:
Plan complete sequence of intentions to take BCI (and necessary prerequisites) to remain on schedule for graduation.
Enroll in courses most applicable to your major as soon as possible, particularly MRKT, FINA, and SCMA, to stay on sequence for major.
There are exceptions to these requirements for specific majors (ABUS, ACCT, MRKT, and ACTS). Please note those exceptions.
If transferring, a maximum of 3 hours may apply, with further restrictions on applicability, to not exceed the 15-hour limitation. For details on transfer rules, see Transfer Credit Restrictions under Course Exclusions and Restrictions.
See the links for each course to know the specific prerequisites and course descriptions.

BCI 1 – BLAW 371 Legal Environment or BLAW 372 Business Law I (ACE 8)
Accounting majors must take BLAW 372.

BCI 2 – SCMA 350 Business Analytics/Information Analysis or in certain cases MRKT 350 Marketing Analytics
Marketing and agribusiness majors may choose to take MRKT 350, which carries an additional prerequisite of MRKT 341.
Students must complete SCMA 250 prior to taking SCMA 350.

BCI 3 – FINA 361 Finance
Actuarial science majors will take FINA 461 Advanced Finance to meet this requirement.
Grade of C or better in this course is a requirement for a number of finance courses that follow.

BCI 4 – MRKT 341 Marketing

BCI 5 – SCMA 331 Operations and Supply Chain Management

BCI 6 – MNGT 301 Introduction to Management

Professional Enhancement Program – Upper level

PrEP – BSAD 333 PrEP III, Internship and Job Search Strategies
1-credit-hour course *(offered Pass/No Pass only)*.
Prerequisites: Major in College of Business; BSAD 222; and a 2.5 GPA.
Taken second semester of sophomore year or junior year.

PrEP – BSAD 444 PrEP IV, Professional and Life Skills
1-credit-hour course *(offered Pass/No Pass only)*.
Prerequisites: Major in College of Business; senior standing or by permission; and a 2.5 GPA.
Taken first or second semester of senior year.

Business Core Advanced-Major (BCA-M) – (21-33 hours)

Coursework for the major requires completion of specific, required courses of the department, along with other guidelines.

Refer to the Major page for a listing of requirements.

Careful and advanced planning is necessary, as some courses for the major may not necessarily be available every semester and classes for the major are limited in the summer sessions.

ALL coursework for the major must be taken for a grade (students may not take classes Pass/No Pass).

Students may be able to take their International Business Course Requirement (IBCR) as part of their major.

Although a 2.5 GPA may not be required to take these courses, a 2.5 is required to apply for graduation; thus, students are expected to maintain this level throughout their collegiate career.

Sequencing of classes is critical; plan the major courses well in advance of enrollment. Visit with an academic advisor for assistance planning critical class sequencing.

By this point in time, the curriculum was designed for ACE (except ACE 10) to have been completed through other coursework. If missing an ACE 4 or 9, there may be options through the major to fulfill both requirements.

A maximum of 3 hours of coursework may transfer if the 15-hour limitation has not been exceeded. Further restrictions may apply.

Business Core Advanced-Capstone (BCA-C) – Two Courses (3 hours)

BCA-C 1 – MNGT 475 Business Strategies (ACE 10)

Reserved for graduating seniors, this course requires the Business Core Foundation (BCF) and Intermediate (BCI) coursework to be completed for enrollment. BLAW 371 or BLAW 372 may be completed concurrently. Actuarial students may take FINA 461 concurrently with MNGT 475.

A capstone course integrating business concepts covered throughout the program.

Course MUST be taken at the University of Nebraska–Lincoln and taken for a grade (not Pass/No Pass).

BCA-C 2 – BSAD 98 Senior Assessment

A 0-credit-hour seminar required of ALL business graduating seniors.

Taught via Canvas—all components must be completed to a satisfactory level to graduate.

Electives – Hours vary to meet 120 hour minimum to graduate

Electives round out the rest of the 120 hour curriculum. Students have the option to choose courses toward a second major, a dual degree, a minor (or two); or students can simply select courses of personal interest.

Some hours may need to be additional business coursework (to meet the requirement that 60 hours of coursework be in business). This requirement will vary by major.

There may be a need to enroll in an international business course requirement (IBCR) if not taken as part of the major or for the business elective(s) requirement.

A minimum of 12 hours of 300/400 upper-level coursework beyond the business core is required for most majors to ensure depth is achieved through enrollment in elective hours. See 300/400-level Elective Requirement below for additional information.

If not completed through the other area requirements, any remaining ACE requirements will need to be completed as required electives.

In a 21-hour major (BCA-M), students will average 31 hours of elective credit; second major options and/or minors may be appropriate to consider for elective hours.

Other Requirements

International Business Course Requirement (IBCR)

The international business course requirement (IBCR) broadens the student's international perspective.

Each student, excluding accounting majors, must include one course which emphasizes an international business perspective.

Actuarial science majors are encouraged to take FINA 450 if they have not met this requirement with completion of NBR 6 – ACE 9 with ECON 321 or MNGT 414.

The IBCR must be taken for a grade.

The course must be chosen from the following approved list of International Business Course Requirement (IBCR) courses. Many of these courses have prerequisites. Some are restricted for education abroad and others may only be offered once a year. Thus, students are advised to plan ahead in scheduling this requirement into their programs.

IBCR Courses

BSAD 491 International Studies in Business and Economics (1-15 hrs)

Available only to students studying abroad for which there is no University of Nebraska–Lincoln equivalent course.

Available also for the Senshu, Japan, CIMBA Italy, and for the China Education Abroad Programs.

Senshu program students may apply 3 hours towards electives in the FINA, MNGT, or MRKT major; 6 hours are applicable for BSAD or IBUS major/minor.

BSAD 491 credit from any other study abroad program should be based on course topics directly associated with a specific major in MNGT, MRKT, or FINA and may need department consent to be used in the major. Students should visit with an academic advisor for assistance.

BSAD 320 Global Issues

BSAD 420 Global Leadership and the Culture Map

ECON 321 (*If not completed at this point,* ECON 321 *may double count for ACE 9.)*

ECON 421 International Trade

ECON 422 International Finance

ECON 423 Economics of the Less Developed Countries

ECON 440 Regional Development
ECON 466 Pro-seminar in International Relations & ECON 467 Pro-seminar in International Relations II*(Credit option for students participating in the Nebraska at Oxford Program.)*
FINA 450 International Financial Management
MNGT 414 *(If not completed at this point,* MNGT 414 *may double count for ACE 9.)*
MRKT 491 International Studies in Business & Marketing
MRKT 453 International Marketing
SCMA 439 Global Sourcing and Distribution
SCMA 459 Global Information Systems

If planned carefully, the IBCR course may count in two places. It is not an extra 3 hours of credit, but rather, is 3 hours embedded within other requirements. If selected carefully, it can also count for 3 hours of credit in the major (i.e., MRKT 453 International Marketing counts for a MRKT elective in the MRKT major and also counts for the IBCR; FINA 450 International Financial Management counts for a FINA elective in the FINA major (general option) and fulfills the IBCR as well). On the other hand, if coursework for the major is already determined by personal choices or requirements, the IBCR may count in electives, and more specifically, for one of the 'business' electives needed for most majors. If not planned carefully this requirement may mean that the student will need to take an additional 3 hours of credit.

300/400 Upper-level Requirement

As part of the degree requirements, all students must complete a certain number of 300/400-level courses. Most of these courses will be completed in the Business Core but some majors will require additional hours from outside of the Business Core. With a "standard" 21-hour major, 12 additional hours will be required. Normally, if a major is larger than 21 hours, the number of additional upper-level courses is reduced. This requirement can be met by business or non-business coursework.

Business coursework from the Business Core Intermediate (BCI), Business Core Advanced-Major (FIRST Major) or Business Core Advanced-Capstone may NOT be used to fulfill this requirement with exceptions noted below:

- If more than 21 hours of coursework for the major are taken at the 300/400 level, and of those hours, coursework is not being double counted toward the NBR and major, then the additional 300/400-level hours can be used to fulfill the 300/400-level requirement. Students will need to consult their Degree Audit to determine how the requirements are applied.
- Business administration majors and business and law majors will complete a 24-hour major and only need to complete 9 upper-level hours.
- Finance majors will take between 24 and 27 hours for their major; consult the major section in this document or the Degree Audit to determine how many hours will double count for this requirement. This will depend on which option is selected for the major.

Actuarial science majors, agribusiness majors, supply chain management majors, and Raikes students do not need to meet this requirement due to the additional hours at the 300/400 level required for the major/program.

Business Core Advanced-Major coursework used for a SECOND major (if selected), or upper-level graded coursework selected for a minor, MAY count.

Coursework that is part of the Non-business Requirement (NBR) taken at the 300/400 level may be double counted to fulfill this requirement, if it is not being used to double count for the first major.

No course may be taken on a Pass/No Pass basis unless it is a business course numbered 395/398/399. Only 3 hours of 395/398/399 credit is allowed for this requirement.

Students generally fulfill this requirement through their electives, but there may be a few upper-class students who may fulfill the requirement with the ACE course requirements.

Business Course/Business Elective Hours

At a minimum, 60 hours of business courses are required for the BSBA degree.

The required hours WILL VARY BY MAJOR, dependent on how requirements have been accepted and/or completed throughout the previous components of the program. While **GENERAL MINIMUM** guidelines by major are noted below, the Degree Audit will specify *minimum business* credit hour expectations for each student. Students will generally see this addressed under the ELECTIVE section (BUSINESS ELECTIVES) on the Degree Audit.

Accounting, economics, management, and marketing majors – 3 hours of business electives.

Business administration majors – no additional business coursework, as the major consists of 24 hours of business coursework.

Actuarial science majors – no additional business coursework, as the major consists of 28 hours of business coursework.

Finance majors – no additional business coursework, as the major consists of 24-27 hours of business coursework.

Supply chain management majors – no additional business coursework, as the major consists of 33 hours of business coursework.

Agribusiness, Business & Law, and Raikes majors – no additional business coursework required due to intent of major as being 'business-related' coursework.

Additional hours may be required if there is a variation in hours for NBR, BCF, BCI or BCA, or if there is a violation of transfer limits, the 15 hour rule, etc.

Coursework must be taken for a grade except for 395/398/399 options, where grades are generally not permitted.

Experiential Learning Requirement

All undergraduates in the College of Business must complete an Experiential Learning designated course or experience (which may include 0-credit courses designated to document

co-curricular activities recognized as experiential learning) beginning with the 2022-23 Undergraduate Catalog.

Foreign Languages/Language Requirement

Other than meeting the minimum requirement for admission to the University, the College does not require any additional work in foreign languages, except for IBUS majors. IBUS majors must complete the equivalent of 8 hours of a foreign language while in college. However, students are encouraged to take language courses.

Minimum Hours Required for Graduation

A minimum of 120 semester hours of credit is required for graduation; more may be necessary if specific degree requirements have not yet been completed.

Grade Rules

C- and D Grades

While students may earn grades of C- or D, there are restrictions and recommendations for such grades and further enrollment options:

- A grade of C or higher is expected in prerequisite courses to enroll in ACCT courses.
- A grade of C or higher is required in FINA 361 in order to take most upper-level FINA courses.
- A grade of C or higher is required in other departmental higher-level sequencing courses (i.e., MATH 101 to take MATH 104, etc.). See course descriptions to determine enrollment restrictions.
- Minimum 2.5 cumulative GPA is required to enroll in many business courses, including ACCT 201, ACCT 202, BLAW 371, BLAW 372, ECON 215, FINA 361, MNGT 301, MNGT 475, MRKT 341, MRKT 350, SCMA 331, SCMA 350.
- Grades of C- or lower may be replaced in the calculation of GPA by retaking the course at the University of Nebraska–Lincoln or within the University system (UNK, UNO).
- Grades of C or better are required to transfer courses from outside of the University of Nebraska system.
- Academic bankruptcy options may be considered for students who have one or two semesters of poor performance.

Pass/No Pass

The Pass/No Pass option is designed for students who want to study areas or topics in which they may have minimum preparation. If used for this purpose, the option can enrich the student's academic experience without lowering the student's grade point average. Several restrictions apply when considering the Pass/No Pass option:

- BSAD 111, BSAD 222, BSAD 333, BSAD 444, BSAD 50, and BSAD 98 are offered only as Pass/No Pass. All are required.
- Students may apply no more than 6 hours of elective credit using the Pass/No Pass option (excludes BSAD 111, BSAD 222, BSAD 333, BSAD 444).
- **No** student enrolled in **any** college at the University of Nebraska–Lincoln may take business courses in the College of Business using the Pass/No Pass option.

College of Business students may **NOT** take coursework to satisfy ACE requirements, the International Business Course Requirement (IBCR), nor any required business coursework, including in the major and minor, using the Pass/No Pass option.

Students majoring in actuarial science through the College of Business may **NOT** take any math, actuarial science, or required courses using the Pass/No Pass option.

Students taking courses to fulfill the requirements of a minor in an area of study outside the College of Business are subject to College rules restricting use of the Pass/No Pass option if courses in the minor are used to meet ACE or any college-specific requirements.

Students seeking any minor outside the College should verify rules applying to minimum grade expectations and Pass/No Pass options with the advisor for their minor, as additional restrictions may apply and often vary.

Students from UNO/UNK/UNMC and from other institutions are subject to the same restrictions listed here for University of Nebraska–Lincoln students.

Exceptions to the above rules are limited to the following and no other exceptions will be made.

An independent study or an internship course (395, 398, 399) may be taken in the College of Business using the Pass/No Pass option with the permission of the instructor and the department chair, but College of Business students who qualify for this exception may use the independent study or an internship course (395, 398, 399) **only** as elective credit.

Advanced Placement grades of P and Credit By Exam grades of P will be accepted to fulfill degree requirements. These hours will not count against the 6-hour-maximum hours permitted.

Students who travel abroad and return with "credit" rather than grades from the institution where they studied may use P grades to fulfill degree requirements. These hours will not count against the 6-hour-maximum number of hours permitted.

GPA Requirements

A 2.5 cumulative grade point average is required to apply for graduation, as well as a requirement for enrollment in ACCT 201 and ACCT 202, ECON 215, BLAW 371 and BLAW 372, FINA 361, SCMA 331, MNGT 301, MNGT 475, SCMA 350 or MRKT 350, and MRKT 341. Some upper-level courses in some majors will also require a 2.5 cumulative GPA. In some instances, a specific grade is required in certain courses to continue with upper-level coursework.

Transfer Credit Rules

For detailed information on transfer credit rules, see Transfer Credit Restrictions under Course Exclusions and Restrictions.

Residency

At least 30 of the last 36 hours of credit must be registered for and completed in residence at the University of Nebraska–Lincoln.

Students electing to study abroad in their final semester are exempted for the hours earned abroad, but no additional hours may be transferred in the last 36 hours. This exemption requires filing a written appeal in the Business Advising and Student Engagement office (Hawks Hall 125).

ACE Requirements

All students must fulfill the Achievement-Centered Education (ACE) requirements. Information about the ACE program may be viewed at the Achievement-Centered Education website. MyRED may also be used to search for currently offered ACE classes.

ACE Achievement-Centered Education—Ten Courses (normally 30 hours)

This is the university's innovative, outcomes-focused general education component designed to enhance the undergraduate experience by providing broad exposure to multiple disciplines, complementing the major, and helping students develop important reasoning, inquiry, and civic capacities.

Important rules to remember when selecting coursework to meet this requirement:

- There are 10 ACE Student Learning Outcomes (SLOs). At least one course, equivalent to 3 credit hours, must be taken for each of the 10 SLOs.
- Up to three ACE SLOs from ACE 4–10 may be satisfied by work in one subject area.
- ACE SLOs must be satisfied by work in at least three subject areas.
- No ACE course may satisfy more than one ACE SLO in a student's program.
- If an ACE course addresses two ACE SLOs, the student decides which one of the two outcomes the course will satisfy in that student's program. (The Degree Audit will make an automatic decision based on first course taken, first SLO needed.)
- As part of the College requirements of non-business and business courses, many courses will also work for ACE. Students should carefully review required coursework with ACE options to make the best use of courses to fulfill both degree requirements as well as University of Nebraska–Lincoln ACE requirements.

Catalog Rule

Students (including transfer students) must follow the Undergraduate Catalog in effect when they are admitted into the College of Business. Students who leave the College and return, or those applying for 'readmission' to the College, are subject to requirements in place at the time of their readmission to the College.

Students who have transferred from a community college may be eligible to fulfill the requirements as stated in the catalog for an academic year in which they were enrolled at the community college prior to attending the University of Nebraska-Lincoln. The College will determine eligibility in consultation with academic advisors, provided the student a) was enrolled in a community college during the catalog year they are utilizing, b) maintained continuous enrollment at the previous institution for 1 academic year or more, and c) continued enrollment at the University of Nebraska-Lincoln within 1 calendar year from their

last term at the previous institution. Students must complete all degree requirements from a single catalog year and within the timeframe allowable for that catalog year.

☰ Catalog Navigation

Business Analytics Major Overview Page Departmental Portion:

The College of Business at the University of Nebraska–Lincoln has established an undergraduate business analytics major to train undergraduate students to solve a variety of problems faced by businesses and other organizations using statistical, analytical and computational methods. The curriculum covers all aspects of business analytics, including descriptive and predictive methods, such as statistical analysis and forecasting, as well as the quantitative methods used to support decision-making. In addition, the business analytics major provides an introduction to several software tools used to solve business analytics problems in practical settings. Throughout the coursework there is an emphasis on the importance of developing a thorough understanding of the underlying business context.

A focus of the coursework is building knowledge in the three foundational areas of business analytics: (1) descriptive analytics is the use of data to describe what has happened; (2) predictive analytics is the use of data to predict what will happen; and (3) prescriptive analytics is the use of data, and the output of descriptive and predictive analytics, to make good decisions and recommendations for action.

The coursework for the business analytics major (bachelor of science in business administration) consists of 120 credit hours, 27 of which are specific to the major. The twenty-one (21) hours of required coursework provide students with training in each of these three areas, as well as an introduction to the software and techniques used to collect, clean and organize data. The required courses also include an experiential learning capstone course which must be taken in the final spring or fall semester prior to graduation. In this course, teams of students solve real-world, company-based business analytics problems under the supervision of a faculty member. Finally, students will complete an additional 6 hours of coursework from directed electives in supporting fields such as accounting, economics, finance, management, or marketing. These electives will demonstrate the critical role played by analytics in every field of business.

The primary student learning outcomes of the business analytics major are:

1. Understand the technical methods of business analytics
2. Learn methods and relevant software systems for data analysis and decision-making
3. Develop the ability to quantitatively model typical business problems
4. Understand the role of data and information in supporting business decision-making
5. Develop the ability to effectively communicate about data and quantitative analysis

Major Requirements

Core Requirements

In addition to the College Degree Requirements, students will complete 27 hours of coursework for the major (BCA-M).

All students, regardless of their major or interests in the College, will take SCMA 250 Spreadsheet Analytics and SCMA 350 Business Analytics/Information Analysis as part of the Business Core Intermediate requirements.
NONE of these courses may be used to count toward the major (BCA-M).

As noted in the College Degree Requirements section, all coursework for the major must be taken for a grade.

Specific Major Requirements

Business Core Advanced–Major (BCA-M)

All coursework for the major must be taken for a grade. No course taken Pass/No Pass will be counted toward the major.

The requirements for the major, in addition to the general College requirements, consist of 21 hours of required major courses as listed below. All supply chain management majors are expected to enroll in SCMA 454 Business Analytics Applications in Practice during their fall/spring semester prior to graduation.

Code	Title	Credit Hours
SCMA 335	Decision Making Models	3
SCMA 437	Risk and Decision Analysis	3
SCMA450	Data Visualization and Communication	3
SCMA 451	Introduction to Predictive Analytics	3

Code	Title	Credit Hours
SCMA452	Database Management Systems	3
SCMA453	Machine Learning for Business Analytics	3
SCMA 454	Business Analytics Applications in Practice	3
Total Credit Hours		**21**

Course List

As well as 6 hours from the following directed electives:

Code	Title	Credit Hours
ACCT 308	Managerial Accounting	3
ACCT 309	Accounting Systems	3
ACTS 430	Actuarial Applications of Applied Statistics	3
ACTS 431	Time Series and Machine Learning	3
ECON 315	Economic Data Visualization and Analysis	3
ECON 417	Introductory Econometrics	3
FINA 401	Quantitative Financial Analysis	3
MNGT XXX	HR Analytics	3
MRKT 345	Market Research	3
MRKT 350	Marketing Analytics	3
SCMA 436	Project Management	3

Course List

Additional Major Requirements

Grade Rules

C- and D Grades

Same as College grade rules.

Pass/No Pass

Same as College Pass/No Pass limits.

GPA Requirements

Same as College GPA requirements.

Area	Number	Hours
NBR	ENGL 150 or 151 (ACE 1)	3
	MATH 104 or 106 (ACE 3)	3
	ACE 4	3
	ACE 5	3
	ACE 7	3
	ACE 9	3
	BSAD 220 (ACE 1)	3
	MRKT 257 (or COMM 286) (ACE 2)	3
BCF	BSAD 50	0
	SCMA 250	1
	ACCT 201	3
	ACCT 202	3
	ECON 211	3
	ECON 212	3
	ECON 215	3
BCI	BLAW 371 or 372	3
	FINA 361	3
	MNGT 301	3
	MRKT 341	3
	SCMA 331	3
	SCMA 350	3
PrEP	BSAD 111	1
	BSAD 222	1
	BSAD 333	1
	BSAD 444	1
BCA (M)	SCMA 335	3
	SCMA 437	3
	SCMA 450	3
	SCMA 451	3
	SCMA 452	3
	SCMA 453	3
	SCMA 454	3
	Directed Electives	6
BCA C	MNGT 475	3
	BSAD 98	0
Elective	Open electives*	28
		120
	*Three hours of open elective should be IBCR and Upper Level Requirement	
**Another three hours of open elective should be Upper Level Requirement (in other words, total of six hours of upper level from 28 hours of elective, and three of these hours would be the IBCR)		

Appendix B: Internal Letters of Support

University of Nebraska Lincoln
College of Business Office of the Dean
730 N. 14th Street, HLH 301 | PO Box 880405 | Lincoln, NE 68588-0405 | 402.472.9500
business.unl.edu

March 28, 2023

Renee Batman
Assistant Vice Chancellor and Chief Administrative Officer
Canfield Administration Building South, Room 208
University of Nebraska-Lincoln
Lincoln, NE 68588-0420

Dear Renee,

I support the Business Analytics Major as described in the enclosed materials and certify that this proposed major has been approved by the College of Business faculty.

The College's Undergraduate Committee reviewed the proposed major and recommended approval at the committee meeting held on Thursday, February 23, 2023.

The Business Analytics Major was discussed by faculty at the March 3, 2023, Faculty Meeting. The College of Business uses electronic voting for all faculty approvals. The electronic voting period ended March 10, 2023, with a final vote tally of 85 respondents in favor, 2 opposed, and 2 abstaining.

Sincerely,

Kathleen A. Farrell
James Jr. and Susan Stuart Endowed Dean

University of Nebraska Lincoln
College of Business Office of the Dean
730 N. 14th Street, HLH 301 | PO Box 880405 | Lincoln, NE 68588-0405 | 402.472.9500
business.unl.edu

Dean Kathy Farrell
James Jr. and Susan Stuart Endowed Dean
College of Business
University of Nebraska – Lincoln
Lincoln, NE 68588

Subject: Proposed undergraduate major in business analytics

Dear Dean Farrell,

As the University of Nebraska-Lincoln looks to diversify its degree program offerings in order to meet employer demands and potentially attract more students to Lincoln, it is exciting to hear that the College of Business leadership is looking to expand the business analytics minor into a major. Having spent nearly four years recruiting for the College of Business, I can attest to the fact that this is an interest area for many of our prospective students – both here in Nebraska and around the globe.

The College of Business Enrollment Management Team receives more inquiries about business analytics than any other business field or industry. At least once or twice a week during campus visits, events, etc., prospective students and/or their family members will ask if this is a major option. Upon learning that it is just offered as a minor, many then comment on the fact that several Big Ten peers and even other in-state schools offer the degree program as a major, and thus, it is surprising that Nebraska Business does not.

After years of domestic students inquiring about business analytics, College of Business recruiters are now receiving similar questions from international students. Business analytics was recently added to the U.S. Department of Homeland Security (DHS) STEM Designated Degree Program List. Thus, graduates from any business analytics program would be eligible for the 24-month STEM optional practical training extension. Between the OPT extension and growing demand for graduates with analytical skillsets, one can only imagine that it would be a big draw for many international students if listed on the application.

Ultimately, from a recruitment perspective, the addition of a business analytics major could help the College of Business garner more interest and deposits. Competition between the University of Nebraska-Lincoln, University of Nebraska-Omaha and Creighton is becoming more intense. In an effort to attract more students to the flagship institution, it is imperative that the college units recognize ways to meet the needs and interests of incoming students and offer programs that will usher them to future career success. Thus, I highly recommend that the leadership team consider adding a business analytics major to the College of Business' academic portfolio.

Best,

Kendra Ritchie

Kendra Ritchie
Associate Director of Recruitment
College of Business

Appendix C: External Industry Letters of Support

University of Nebraska Lincoln
College of Business Office of the Dean
730 N. 14th Street, HLH 301 | PO Box 880405 | Lincoln, NE 68588-0405 | 402.472.9500
business.unl.edu

Bryan Health

April 10th, 2023

Dean Kathy Farrell
James Jr. and Susan Stuart Endowed Dean
College of Business
University of Nebraska – Lincoln
Lincoln, NE 68588

Subject: Proposed undergraduate major in business analytics

Dear Kathy,

I am pleased to submit this letter of support for the proposed undergraduate major in business analytics, to be offered by the College of Business at the University of Nebraska – Lincoln.

As the Senior Director of Analytics for Bryan Health, I was excited to learn about this proposed degree program. Organizations of all types are recognizing the need for professionals with the knowledge and skills to use data to better understand their business environment, to anticipate future needs, to enable better decision-making, and to generate value for the organization. At Bryan, we've made analytics a core strategy of the organization, making major strides in how we build and use analytics to lower the cost of care, improve quality, and better advance the health of the communities we serve.

Beyond Bryan and healthcare, Nebraska companies, including those in the agriculture, food, transportation, logistics, and manufacturing sectors, have struggled to fill their workforce needs in the business analytics area. These organizations have a need for employees with relevant statistical, computational and analytical training and expertise. I see your proposed degree program as a way to address these workforce needs by providing educated and trained professionals ready to contribute to our organization's success and to help grow industry in Nebraska.

The proposed B.A. in Business Analytics degree program, with its focus on the three pillars of business analytics, i.e descriptive, predictive and prescriptive methods, and training in a variety of analytics tools, along with its coursework in the foundations of business, promises to produce students who can contribute to the success of organizations such as Bryan Health. This proposed program will produce graduates that are highly employable in a wide variety of industries and organizations.

I strongly support your development of the undergraduate major in business analytics. I am excited about the opportunity to work with you and your graduates.

Sincerely,

Benjamin Sparks
Senior Director, Analytics
Bryan Health

Deloitte.

Deloitte & Touche LLP
50 South 6th Street, Suite 2800
Minneapolis, Minnesota 55402
USA

Tel: (612) 397-4000
www.deloitte.com

April 10, 2023

Dean Kathy Farrell
James Jr. and Susan Stuart Endowed Dean
College of Business
University of Nebraska – Lincoln
Lincoln, NE 68588

Subject: Proposed undergraduate major in business analytics

Dear Kathy,

I am pleased to submit this letter of support for the proposed undergraduate major in business analytics, to be offered by the College of Business at the University of Nebraska – Lincoln.

As the Managing Partner for Minneapolis, and proud Nebraska Alum, I was excited to learn about this proposed degree program. It is widely understood that business analytics is an area with significant growth and demand. Organizations of all types are recognizing the need for professionals with the knowledge and skills to use data to better understand their business environment, to anticipate future needs, to enable better decision-making, and to generate value for the organization. We can see this reality in the marketplace with the demand our clients have for analytic capabilities.

Nebraska companies, including those in the agriculture, food, transportation, logistics, and manufacturing sectors, have struggled to fill their workforce needs in the business analytics area. These organizations have a need for employees with relevant statistical, computational and analytical training and expertise. I see your proposed degree program as a way to address these workforce needs by providing educated and trained professionals ready to contribute to our organization's success and to help grow industry in Nebraska.

The proposed undergraduate business analytics degree program, with its focus on business analytics, i.e., descriptive, predictive and prescriptive methods, and training in a variety of analytics tools, along with its coursework in the foundations of business, promises to produce students who can contribute to the success of employers. Thus, I anticipate that this proposed program will produce graduates that are highly employable in a wide variety of industries and organizations, including my own.

In summary, I strongly support your development of the undergraduate major in business analytics. If we can be a resource as you implement this program, please let me know. I am excited about the opportunity to work with you and your graduates.

Sincerely,

Matthew M. Marsh
Partner

10 April 2023

Dean Kathy Farrell
James Jr. and Susan Stuart Endowed Dean
College of Business
University of Nebraska – Lincoln
Lincoln, NE 68588

Subject: Proposed undergraduate major in business analytics

Dear Kathy,

On the behalf of Hudl, I am pleased to submit this letter of support for the proposed undergraduate major in business analytics, to be offered by the College of Business at the University of Nebraska – Lincoln.

As the SVP of Business Operations, I was excited to learn about this proposed degree program. It is widely understood that the need for qualified business analysts is underserved and will continue to grow. The extremely competitive job market for these roles is proof of the need for professionals with the knowledge and skills to use data to better understand their business environment, anticipate future needs, enable better decision-making, and generate value for the organization. This is a skill set that Hudl looks for in analyst positions and has become increasingly important as a foundational skill set in other business roles such as Program Management, Revenue Operations and IT Leadership.

From conversations with my peers, I know this is a pressing need for other Nebraska-based companies, including those in the technology and healthcare sectors. These organizations need employees with relevant statistical, computational and analytical training and expertise. I see your proposed degree program as a way to address these workforce needs by providing educated and trained professionals ready to contribute to our organization's success and help grow the industry in Nebraska.

The proposed undergraduate business analytics major, with its focus on the three pillars of business analytics, i.e. descriptive, predictive and prescriptive methods, and training in a variety of analytics tools, along with its coursework in the foundations of business, promises to produce students who can contribute to the success of organizations such as Hudl. I believe this proposed major will produce graduates that are highly employable in a wide variety of industries and organizations, including my own.

I strongly support your development of the undergraduate major in business analytics. If we can be a resource as you implement this program, please let me know. I am excited about the opportunity to work with you and your graduates.

Sincerely,

Courtney Rodgers
SVP Business Operations
Hudl

KANSAS CITY CHIEFS FOOTBALL CLUB

Dan Crumb
Chief Financial Officer

April 12, 2023

Dean Kathy Farrell
James Jr. and Susan Stuart Endowed Dean
College of Business
University of Nebraska – Lincoln
Lincoln, NE 68588

Subject: Proposed undergraduate major in business analytics

Dear Kathy,

On the behalf of the Kansas City Chiefs Football Club, Inc., I am pleased to submit this letter of support for the proposed undergraduate major in business analytics, to be offered by the College of Business at the University of Nebraska – Lincoln.

As the Chief Financial Officer of the Kansas City Chiefs, I was excited to learn about this proposed degree program. It is widely understood that business analytics is an area of significant current and future growth market growth. Organizations of all types are recognizing the need for professionals with the knowledge and skills to use data to better understand their business environment, to anticipate future needs, to enable better decision-making, and to generate value for the organization. The Chiefs organization utilizes business analytics extensively to support our various revenue streams, marketing efforts and create operational efficiencies.

Nebraska companies, including those in the agriculture, food, transportation, logistics, and manufacturing sectors, have struggled to fill their workforce needs in the business analytics area. These organizations have a need for employees with relevant statistical, computational and analytical training and expertise. I see your proposed degree program as a way to address these workforce needs by providing educated and trained professionals ready to contribute to our organization's success and to help grow industry in Nebraska.

The proposed Business Analytics degree program, with its focus on the three pillars of business analytics, i.e., descriptive, predictive and prescriptive methods, and training in a variety of analytics tools, along with its coursework in the foundations of business, promises to produce students who can contribute to the success of organizations such as the Kansas City Chiefs. Thus, I anticipate that this proposed program will produce graduates that are highly employable in a wide variety of industries and organizations, including my own.

In summary, I strongly support your development of the undergraduate major in business analytics. If we can be a resource as you implement this program, please let me know. I am excited about the opportunity to work with you and your graduates.

Sincerely,

Dan Crumb
Chief Financial Officer, Kansas City Chiefs Football Club, Inc.

4/5/2023

Dean Kathy Farrell
James Jr. and Susan Stuart Endowed Dean
College of Business
University of Nebraska – Lincoln
Lincoln, NE 68588

Dear Kathy,

I am writing on behalf of Nelnet, a company that has been a proud supporter of the University of Nebraska-Lincoln (UNL) for many years. We are excited about the proposed new major in Business Analytics at the UNL College of Business and want to express our support for this initiative.

As the Director of Data Science and Analytics at Nelnet, I understand the importance of data-driven decision-making in business, and the need for professionals who possess both the technical and strategic expertise to excel in this field. The demand for these individuals is growing exponentially, making it increasingly difficult for us to find and hire team members in these roles. The newly proposed major is smart, and timely, as we expect this trend to continue into the future. As an organization with operations intersecting across finance, education, and technology, we are continuously seeking out analytics-focused team members that can help us navigate a wide range of business opportunities and adapt to ever changing environments and technology. In reviewing the curriculum I am confident it will equip students with the right mix of critical skills, including core technical areas like data structuring, statistics, modeling, and visualization.

By offering a Business Analytics major, UNL would not only enhance the employability of its graduates, but also contribute to the state's economic growth by attracting and retaining top talent in Nebraska. As a company headquartered in Lincoln, Nelnet understands the importance of having access to a skilled and innovative workforce. We believe the creation of this major will created a pipeline of talent that we can tap into for years to come.

In summary, we are excited about the prospect of a new major in Business Analytics at UNL and fully support this initiative. We are confident that this program will produce graduates with the skills and expertise needed to thrive in the data-driven business world, and we look forward to working closely with the College of Business as it embarks on this new chapter in the academic landscape.

Kindly,

Brendan Brown
Director of Data Science & Analytics
Nelnet

WERNER
WE KEEP AMERICA MOVING®

April 5, 2024

Dean Kathy Farrell
James Jr. and Susan Stuart Endowed Dean
College of Business
University of Nebraska – Lincoln
Lincoln, NE 68588

Subject: Proposed undergraduate major in business analytics

Dear Kathy,

On the behalf of Werner Enterprises, Inc. I am pleased to submit this letter to strongly support the proposed undergraduate major in business analytics, to be offered by the College of Business at the University of Nebraska – Lincoln.

As the Vice President of Logistics I was excited to learn about this proposed degree program. It is widely understood that business analytics is an area of significant current and future growth market growth. In nearly every aspect of our business, our divisions have the need for professionals with the knowledge and skills to use data to better understand their business environment, to anticipate future needs, to enable better decision-making, and to generate value for the organization. Our Business Analytics team at Werner is heavily involved in every aspect of our business and the skill sets needed for this growing part of our business are in short supply. The analytics team touches our customer facing business and every internal area including operations, maintenance, business development, safety, human resources and engineering.

Nebraska companies, including those in the agriculture, food, transportation, logistics, and manufacturing sectors, have struggled to fill their workforce needs in the business analytics area. These organizations have a need for employees with relevant statistical, computational and analytical training, familiarity with data management tools and expertise. I see your proposed degree program as a way to address these workforce needs by providing educated and trained professionals ready to contribute to our organization's success and to help grow industry in Nebraska

The proposed undergraduate business analytics major, with its focus on the three pillars of business analytics, i.e., descriptive, predictive and prescriptive methods, and training in a variety of analytics tools, along with its coursework in the foundations of business, promises to produce students who can contribute to the success of organizations such as Werner Enterprises. Thus, I anticipate that this proposed major will produce graduates that are highly employable in a wide variety of industries and organizations, including my own.

In summary, I strongly support your development of the undergraduate major in business analytics. If we can be a resource as you implement this program, please let me know. I am excited about the opportunity to work with you and your graduates.

Sincerely,

Craig Stoffel
Vice President Logistics

Global Headquarters | 14507 Frontier Road, Omaha, NE 68138 | PO Box 45308, Omaha, NE 68145
402.895.6640 | werner.com

Appendix D: Student Letters of Support

University of Nebraska Lincoln
College of Business Office of the Dean
730 N. 14th Street, HLH 301 | PO Box 880405 | Lincoln, NE 68588-0405 | 402.472.9500
business.unl.edu

March 29, 2023

Dean Kathy Farrell
James Jr. and Susan Stuart Endowed Dean
College of Business
University of Nebraska – Lincoln
Lincoln, NE 68588

Subject: Proposed undergraduate major in business analytics

Dear Dean Farrell,

My name is Cooper Moore, and I am currently a senior in the College of Business at the University of Nebraska – Lincoln, majoring in Finance with minors in Business Analytics and Economics. I am from Beaver Lake, Nebraska and anticipate graduating this May. During my time on campus, I have served as a BSAD 111 student strengths coach and as a member of the Big Red Investment Club.

I am writing this letter to express my support for the proposed undergraduate major in business analytics, to be offered by the College of Business at the University of Nebraska – Lincoln. I am excited to hear that this major is being developed and I believe it will be a popular option among students in the College of Business.

Business analytics is an area of high demand among employers, with significant growth expected to continue in the future. Companies and organizations of all types recognize the need for professionals with the knowledge and skills to use data to better understand their business environment, to anticipate future needs, to improve decision-making, to generate value for the organization, and to maintain competitive advantage.

I chose to minor in Business Analytics for this exact reason. As the ability to digest, understand, and draw insights from this data increases in importance, graduates with these skills have become increasingly valuable in today's workplace. The Business Analytics minor has served as a natural complement to my finance major and helped me secure a position as a commercial banking intern. During my time in this role, I was best able to utilize my skills by using descriptive methods and visualizations to better break down and understand bank customers' financial data. Furthermore, although I plan to further my education post-graduation, I have looked at job postings and communicated with seniors who will be entering the workforce, and it is my observation that proficiency in business analytics opens the door to an incredibly wide range of job outcomes for graduates.

I believe the proposed undergraduate major in business analytics has the potential to prepare students to meet this growing need. The coursework in the proposed program will help students to develop the statistical and analytical skills that are required to fill these industry positions, and also provide training in the tools and software commonly used in industry.

In summary, I strongly support the development of the proposed undergraduate major in business analytics at the University of Nebraska - Lincoln. It is a program that will be attractive to students who are seeking to advance their careers in the growing field of business analytics, who are looking for a competitive edge on job market, and who would like to improve their earning potential.

Sincerely,

Cooper Moore

March 30, 2023

Dean Kathy Farrell
James Jr. and Susan Stuart Endowed Dean
College of Business
University of Nebraska – Lincoln
Lincoln, NE 68588

Subject: Proposed undergraduate major in Business Analytics

Dear Dean Farrell,

My name is Megan Whittaker. I am currently a student in the College of Business at the University of Nebraska – Lincoln, pursuing a Master of Science in Business Analytics. I graduated from UNL in May of 2022, majoring in finance with minors in business analytics, economics, and mathematics. I am from Elkhorn, Nebraska, and anticipate graduating in December 2023. I am also a women's golf team captain here at Nebraska. I have competed for the last five seasons here and have been fortunate to participate in other athletic department leadership groups. I am currently in the 'Skers Who Serve group, where we initiate volunteer activities throughout the community for student-athletes. For two years, I participated in the Student-Athlete Advisory Committee and the JEDI (Justice, Equity, Diversity, Inclusion) group. Finally, I participated in Inner Circle, where we developed leadership and professional development skills. I have thoroughly enjoyed my time in academics, athletics, and volunteering at UNL over the last five years.

I am writing this letter to express my support for the proposed undergraduate major in business analytics to be offered by the College of Business at the University of Nebraska – Lincoln. I am excited to hear that this major is being developed, and I believe it will be a popular option among students in the College of Business.

Business analytics is an area of high demand among employers, with significant growth expected to continue in the future. Companies and organizations recognize the need for professionals with the knowledge and skills to use data to better understand their business environment, anticipate future needs, improve decision-making, generate value for the organization, and maintain competitive advantage.

I am very thankful to have exposure and experience in business analytics because of the courses I completed for my minor. I had the fantastic opportunity to intern for Titleist last summer, where I was able to use the skills I had learned to improve their internship program. I was tasked with building a dashboard to keep their internship program organized so it could grow. I also analyzed survey results throughout the company to create summaries which I presented to the human resource team. Using data to help companies improve is something I am very passionate about. I am very thankful I had the opportunity to learn about different data application methods throughout my education at UNL.

The proposed undergraduate major in business analytics has the potential to prepare students to meet this growing need. The coursework in the proposed program will help students develop the statistical and analytical skills required to fill these industry positions and also provide training in the tools and software commonly used in the industry, which I witnessed first-hand.

In summary, I strongly support the development of the proposed undergraduate major in business analytics at the University of Nebraska - Lincoln. It is a program that will be attractive to students seeking to advance their careers in the growing field of business analytics, who are looking for a competitive edge on the job market, and who would like to improve their earning potential.

Sincerely,

Megan Whittaker

Megan Whittaker

March 28, 2023

Dean Kathy Farrell
James Jr. and Susan Stuart Endowed Dean
College of Business
University of Nebraska – Lincoln
Lincoln, NE 68588

Subject: Proposed undergraduate major in business analytics

Dear Dean Farrell:

My name is Reese Munson. I am currently a student in the College of Business at the University of Nebraska – Lincoln, majoring in Economics with minors in Mathematics and Business Analytics. I am from Omaha, NE and anticipate graduating in May 2024. I conduct research in the Bureau of Business Research, assist in the Business Career Center as a Peer Career Coach, and actively participate in Husker Venture Fund, Omicron Delta Epsilon, and the Business Honors Academy.

I am writing this letter to express my support for the proposed undergraduate major in business analytics, to be offered by the College of Business at the University of Nebraska – Lincoln. I am excited to hear that this major is being developed and I believe it will be a popular option among students in the College of Business.

Business analytics is an area of high demand among employers, with significant growth expected to continue in the future. Companies and organizations of all types recognize the need for professionals with the knowledge and skills to use data to better understand their business environment, to anticipate future needs, to improve decision-making, to generate value for the organization, and to maintain competitive advantage.

Throughout my time as a student, I have pieced together classes to gain the knowledge that this major would offer, including various math, economics, supply chain, analytics, and computer science courses. This upcoming summer, I will hold an internship at Bank of America as an Enterprise Credit Analyst, and in the interview process, I found that many of the classes that would be offered in a Business Analytics major would apply, such as financial analysis, intermediate accounting, and data modeling.

I believe the proposed undergraduate major in business analytics has the potential to prepare students to meet this growing need. The coursework in the proposed program will help students to develop the statistical and analytical skills that are required to fill these industry positions, and also provide training in the tools and software commonly used in industry.

In summary, I strongly support the development of the proposed undergraduate major in business analytics at the University of Nebraska - Lincoln. It is a program that will be attractive to students who are seeking to advance their careers in the growing field of business analytics, who are looking for a competitive edge on job market, and who would like to improve their earning potential.

Sincerely,

Reese Munson

Appendix E: 2023 Market Analysis for Business Analytics

University of Nebraska Lincoln
College of Business Office of the Dean
730 N. 14th Street, HLH 301 | PO Box 880405 | Lincoln, NE 68588-0405 | 402.472.9500
business.unl.edu

University of Nebraska - Lincoln

New Academic Program Market Scan Undergraduate Program in Business Analytics

March 1, 2023

Table of Contents

Methodology

Institution Data

The institution data in this report is taken directly from the National Center for Education Statistic's (NCES) Integrated Postsecondary Education Data System (IPEDS) to assess academic program viability through conferral data and online data. Data was collected and analyzed independently or through a third-party provider, Lightcast, which provides the University of Nebraska-Lincoln with access to their analytical open-source higher education software.

Occupation Data

Lightcast occupation employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates are also affected by county-level Lightcast earnings by industry.

Job Postings Data

Lightcast Job postings are collected from various sources and processed/enriched to provide information such as standardized company name, occupation, skills, and geography.

Region

The analysis was conducted at two levels: all degree granting institutions in the United States and all degree granting institutions in Colorado, Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, and Wyoming.

Definitions

"CIP" refers to the NCES Classification of Instructional Programs code

"State" and "statewide" refers to Nebraska.

"Completions", "conferrals" and "conferred" refers to the number of degrees awarded by institutions, as reported in IPEDS as degree conferred.

Profiled Classification of Instructional Programs Categories

52) Business, Management, Marketing, and Related Support Services "Instructional programs that prepare individuals to perform managerial, technical support, and applied research functions related to the operation of commercial and non-profit enterprises and the buying and selling of goods and services". (NCES, 2023).

a. **52.1301 Management Science, General** "A general program that focuses on the application of statistical modeling, data warehousing, data mining, programming, forecasting and operations research techniques to the analysis of problems of business organization and performance. Includes instruction in optimization theory and mathematical techniques, data mining, data warehousing, stochastic and dynamic modeling, operations analysis, and the design and testing of prototype systems and evaluation models". (NCES, 2023)

30) Multi/Interdisciplinary Studies "Instructional programs that derive from two or more distinct programs to provide a cross-cutting focus on a subject concentration that is not subsumed under a single discipline or occupational field". (NCES, 2023).

b. **30.7102 Business Analytics** "A program that prepares individuals to apply data science to solve business challenges. Includes instruction in machine learning, optimization methods, computer algorithms, probability and stochastic models, information economics, logistics, strategy, consumer behavior, marketing, and visual analytics". (NCES, 2023)

Effective March 18, 2020, the NCES updated Classification of Instructional Program (CIP) codes for 2020 reporting and beyond. In making this change, NCES created an interdisciplinary CIP code for Business Analytics. Prior to 2020, there was not a defined category for business analytics. For the purposes of this study, UNL will utilize 52.1301, Management Science for historical institution data. Data from 2017-2019 will reflect only 52.1301, while data from 2020-21 will reflect both 52.1301 and 30.7102.

New Program Market Scan

Undergraduate Business Analytics Degree (52.1301 and 30.7102)

Market Scan Key Insights:

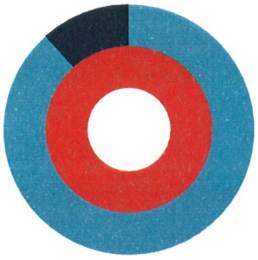
- Regional competitors have driven substantial completions since 2017, up 87%, compared to national growth of 44%. In the Big10, this growth is 211%. There are more campus based programs, than online, but online has potential for growth with fewer competitors.
- Graduates can enter many occupation categories and the opportunities are strong nationally and regionally at a wide array of companies.
- There is strong competition for this degree program nationally but there is an opportunity to develop a foothold in the region both on campus and online.

Undergraduate Degree Completions

	CIP Code	Number of Degrees Conferred					Growth 2017-2021
		2017	2018	2019	2020	2021	
National	52.1301 (Management Science) 30.7102 (Data Science	3,859	4,167	4,591	5,532 241	5,585 391	44.7%
Regional*	52.1301 (Management Science) 30.7102 (Data Science	182	357	403	397 40	341 44	87.3%
Nebraska	52.1301 (Management Science) 30.7102 (Data Science	0	60	72	72 0	74 0	
Big 10	52.1301 (Management Science) 30.7102 (Data Science	102	130	187	282 0	318 0	211.8%

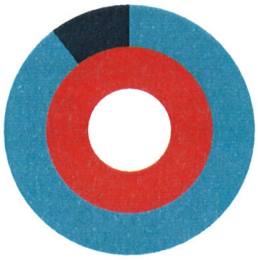
*The region for this analysis included Colorado, Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, and Wyoming

National Overview, Fall 2021



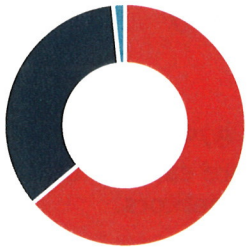
	Completions (2021)	% Completions	Institutions (2021)	% Institutions
All Programs	5,976	100%	131	100%
Distance Offered Programs	691	12%	23	18%
Non-Distance Offered Programs	5,285	88%	108	82%

Regional Overview, Fall 2021



	Completions (2021)	% Completions	Institutions (2021)	% Institutions
All Programs	385	100%	17	100%
Distance Offered Programs	40	10%	3	18%
Non-Distance Offered Programs	345	90%	14	82%

National Market Share by Institution Type, Fall 2021



Institution Type	Completions (2021)	Market Share
Public, 4-Year or above	3,818	63.9%
Private not-for-profit, 4-year or above	2,060	34.5%
Private for-profit, 4-year or above	98	1.6%

Undergraduate Degree Campus Competition

	CIP Code	Number of Campus Programs					Growth 2017-2021
		2017	2018	2019	2020	2021	
National	52.1301 (Management Science) 30.7102 (Data Science	69	74	86	97 5	101 11	46.3%
Regional*	52.1301 (Management Science) 30.7102 (Data Science	8	11	12	14 0	13 1	62.5%
Nebraska	52.1301 (Management Science) 30.7102 (Data Science	0	1	1	1 0	1 0	
Big 10	52.1301 (Management Science) 30.7102 (Data Science	2	2	2	2 0	2 0	0.0%

*The region for this analysis included Colorado, Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, and Wyoming

Undergraduate Degree Online Competition

	CIP Code	Number of Online Programs					Growth 2017-2021
		2017	2018	2019	2020	2021	
National	52.1301 (Management Science) 30.7102 (Data Science	8	13	13	15 2	18 5	125.0%
Regional*	52.1301 (Management Science) 30.7102 (Data Science	1	2	2	2 1	2 1	100%
Nebraska	52.1301 (Management Science) 30.7102 (Data Science	0	0	0	0 0	0 0	
Big 10	52.1301 (Management Science) 30.7102 (Data Science	0	0	0	0 0	0 0	

*The region for this analysis included Colorado, Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, and Wyoming

Top National Conferral Competition

Institution Name	State	2021 Completions	Growth % YOY (2021)	Market Share (2021)	IPEDS Cost per Credit (2021)
Virginia Polytechnic Institute	VA	460	4.1%	7.7%	$490
Ohio University	OH	299	22.0%	5.0%	$606
University of South Carolina-Columbia	SC	204	-21.5%	3.4%	$512
Bridgewater State University	MA	184	13.6%	3.1%	$468
Rutgers University-New Brunswick	NJ	183	15.1%	3.1%	$404
Grand Valley State University	MI	175	12.2%	2.9%	$584
New York University	NY	169	-11.5%	2.8%	$1,583
Arizona State University-Immersion Campus	AZ	150	11.9%	2.5%	$765
University of Pennsylvania	PA	137	-8.7%	2.3%	$1,945
University of Maryland-College Park	MD	135	9.8%	2.3%	$374

Top Regional Conferral Competition

Institution Name	State	2021 Completion	Growth % YOY (2021)	Market Share (2021)	IPEDS Cost per Credit (2021)
University of Wyoming	WY	75	-23.5%	19.5%	$154
Creighton University	NE	74	2.8%	19.2%	$1,334
University of Kansas	KS	64	-5.9%	16.6%	$336
University of Northern Iowa	IA	23	Insf. Data	6.0%	$325
Saint Mary's University of Minnesota	MN	21	-47.5%	5.5%	$1,290
Rockhurst University	MO	21	31.3%	5.5%	$1,317
Saint Ambrose University	IA	21	-4.5%	5.5%	$970
Saint Louis University	MO	20	81.8%	5.2%	$1,680
Capella University	MN	10	11.1%	2.6%	$393
Loras College	IA	10	0.0%	2.6%	$750

*The region for this analysis included Colorado, Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, and Wyoming

Target Occupations

2.12M	+3.5%	$43.19/hr $89.8K/yr	265,285
Jobs (2021)*	**% Change (2021-2022)***	**Median Earnings**	**Annual Openings***

*Filtered by the proportion of the national workforce in these occupations with a bachelor's degree

Occupation	2021 Jobs*	Annual Openings*	Median Earnings	Growth (2021 - 2022)*
General and Operations Managers	1,050,226	125,838	$45.54/hr	3.21%
Market Research Analysts and Marketing Specialists	433,813	63,423	$32.07/hr	4.75%
Management Analysts	423,510	53,140	$43.24/hr	3.28%
Chief Executives	116,642	11,293	$78.90/hr	1.72%
Data Scientists	41,725	5,386	$48.35/hr	5.61%
Operations Research Analysts	41,361	4,506	$40.64/hr	3.77%
Statisticians	12,932	1,531	$44.07/hr	4.47%
Mathematical Science Occupations, All Other	1,818	168	$31.55/hr	0.72%

National Job Posting Summary

10.93M
Unique Postings
30.45M Total Postings

3 : 1
Posting Intensity
Regional Average: 3 : 1

23 days
Median Posting Duration
Regional Average: 25 days

There were **30.45M** total job postings from January 2013 to January 2023, of which **10.93M** were unique. These numbers give a Posting Intensity of **3-to-1**, meaning that for every 3 postings there is 1 unique job posting.

This is close to the Posting Intensity for all other occupations and companies nationally (3-to-1), indicating that they are putting average effort toward hiring for this position.

Regional Job Posting Summary

1.03M	3 : 1	24 days
Unique Postings	Posting Intensity	Median Posting Duration
2.71M Total Postings	Regional Average: 3 : 1	Regional Average: 25 days

There were **2.71M** total job postings from January 2013 to January 2023, of which **1.03M** were unique. These numbers give a Posting Intensity of **3-to-1**, meaning that for every 3 postings there is 1 unique job posting.

This is close to the Posting Intensity for all other occupations and companies in the region (3-to-1), indicating that they are putting average effort toward hiring for this position.

Top Regional Company Job Postings

Company	Total/Unique (Jan 2013 - Jan 2023)	Posting Intensity	Median Posting Duration
Elevance Health	35,118 / 23,762	1 : 1	21 days
Wells Fargo	89,879 / 19,570	5 : 1	15 days
UnitedHealth Group	64,462 / 18,830	3 : 1	22 days
CTG	13,776 / 10,190	1 : 1	22 days
Robert Half	24,586 / 10,012	2 : 1	26 days
Randstad	21,778 / 8,904	2 : 1	23 days
Accenture	18,265 / 8,597	2 : 1	21 days
US Bank	23,714 / 8,538	3 : 1	24 days
Deloitte	16,904 / 6,634	3 : 1	25 days
Dollar Tree	37,946 / 5,948	6 : 1	23 days