UNC CHARLOTTE

Office of Academic Affairs

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December 14, 2017

Dr. Richard Leeman
Faculty President
UNC Charlotte

Dear Rich,

In accordance with the procedure concerning degree name changes, I am forwarding a request from the Belk College of Business to change the name of the BSBA in Business Administration (current) to BSBA in Business Analytics (proposed).

The justification for the change is attached. In accordance with the procedure (http://provost.uncc.edu/policies/degree-name-changes) I ask that you consult with the Undergraduate Course and Curriculum Committee and following that consultation that the name change be considered for faculty approval at the subsequent Faculty Executive Committee and Faculty Council meetings.

Sincerely,

Joan F. Lorden
Provost and Vice Chancellor for Academic Affairs

Attachment

cc: Steve Ott, Dean, Belk College of Business
Matt Wyse, Faculty Governance Assistant

UNC CHARLOTTE

BELK COLLEGE *of* BUSINESS

Office of the Dean

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To: Dr. Joan F. Lorden
Provost and Vice Chancellor for Academic Affairs

From: Dr. Steven H. Ott
Dean, Belk College of Business

Date: December 13, 2017

Re: Name and CIP code change for BSBA in Business Administration with a concentration in Business Analytics

The Belk College of Business is requesting both a name change and a change in the CIP code for the Bachelor of Science in Business Administration (BSBA) in Business Administration with a concentration in Business Analytics. The Business Analytics concentration was established in 2015. The College, and in particular, the Department of Business Information Systems and Operations Management, has spent this Fall completing a significant curriculum revision to best reflect the goals of the program as well as the evolving discipline. To more clearly signify the Business Analytics program, the College would like to change the name of the program from a BSBA in Business Administration to a BSBA in Business Analytics. This name change is also more in line with our other undergraduate programs.

Additionally, the College would also like to change the CIP code from the existing CIP code of 52.0201, "Business Administration and Management, General", to CIP code 52.1301, "Management Science". The revised Business Analytics curriculum is more closely aligned with CIP code 52.1301. CIP code 52.1301 also falls within the Department of Homeland Security's STEM designated degree program list, and the program CIP code change to CIP code 52.1301 would allow the program to more clearly signal to potential students and employers the program's STEM-related content and enable international students graduating with a BSBA in Business Analytics to qualify for a 24-month extension of their optional practical training period.

An analysis of UNC Charlotte's BSBA in Business Analytics curriculum is compared to curricula from identified STEM designated undergraduate Business Analytics programs in the U.S.

Should you or other individuals in the review process have any questions, please do not hesitate to contact me.

Request to Change the Name and CIP Code for the Belk College of Business BSBA in Business Administration with a Concentration in Business Analytics

UNC Charlotte was authorized to offer the Bachelor of Science in Business Administration (BSBA) degree in 1972. As this program grew, specializations within the degree were subdivided into seven programs in 1992: BSBA in Finance, BSBA in International Business, BSBA in Management, BSBA in Management Information Systems, BSBA in Marketing, and BSBA in Operations and Supply Chain Management. The BSBA in Business Administration remained but did not enroll new students from 1992 to 2015; in 2015, the curriculum was reevaluated and the BSBA in Business Administration with a concentration in Business Analytics was established. However, in light of recent significant curriculum revisions, and to best represent the program to potential students and employers, we are requesting that the BSBA in Business Administration with a concentration in Business Analytics be renamed to a BSBA in Business Analytics. All BSBA programs created in 1992 share a common core of business courses and prerequisite progression courses, and through a significant curriculum revision the revised undergraduate Business Analytics program will now share these common core and progression requirements. The name change will better align with the existing naming convention for our undergraduate programs throughout the College.

In combination with the curriculum revision, faculty from the Department of Business Information Systems and Operations Management (BISOM), the BISOM Department Chair, and the Director of Academic Planning and Accreditation conducted a program analysis to explore our CIP code and alignment with the curricula of other business schools utilizing a STEM designation for similar programs. Through this analysis, the department committee found that the current CIP code is not the best fit for UNC Charlotte's revised BSBA in Business Analytics curriculum.

The current CIP code for the BSBA in Business Administration with a concentration in Business Analytics is 52.0201, "Business Administration and Management, General", where the definition is as follows: "A program that generally prepares individuals to plan, organize, direct, and control the functions and processes of a firm or organization. Includes instruction in management theory, human resources management and behavior, accounting and other quantitative methods, purchasing and logistics, organization and production, marketing, and business decision-making." In contrast, the STEM-designated "Management Science" CIP code 52.1301 is as follows: "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."

Curriculum Overview

The revised BSBA in Business Analytics program prepares graduates for jobs involving data-driven business intelligence, decision models, and big data analytics for graduate education in data science and business analytics, economics, marketing, mathematical finance, and supply chain management. The revised program structure will require a common set of five required core major courses and one restricted elective course; students will also take the core business courses taken by other majors in the College. This streamlines the business analytics curriculum, both enabling the major to be accessible to more students and facilitating completion of degree requirements in four years.

The BSBA in Business Analytics program involves the application of analytical models and decision-support tools to gain insight and improve data-driven business decisions. Applications of business analytics span all functional business areas, including marketing, operations, product and technology innovations, financial services, and human resource management. The study of business analytics prepares students for careers broadly referred to under the heading "data science". Students take required major courses in *Econometrics, Programming for Business Analytics, Data and Information Management, Business Analytics*, and *Business Analytics II*, as well as a restricted elective, where electives are focused on expanding an individual's analytical skills.

Of the five required major courses, four specifically focus on data warehousing, mining, and programming. INFO 3221, *Programming for Business Analytics*, aims to equip students with fundamental programming constructs and concepts required for solving data analytics problems. Students learn how to use widely adopted industry programming platforms such as Python and R to extract, transform, and make use of business data. INFO 3233, *Data and Information Management*, introduces students to databases for business applications. Students develop the ability to effectively design and implement relational databases for business as well as utilize software to structure, query, and update databases through the use of SQL. INFO 3236, *Business Analytics*, introduces students to various data mining and business intelligence methods. Students learn the principles of data management in "big data" as well as the issues relating to storing and organizing data resources using data warehousing. They learn various data mining and analytical tools and techniques for solving business problems and are able to effectively use reporting and visual and analytical tools. INFO 3237, *Business Analytics II*, focuses on building predictive analytics and understanding a variety of machine learning methods. Emphasis is placed on the "know-how" aspect - how to extract and apply business intelligence to improve business decision making.

Two of the required courses focus on applying econometric, forecasting, and operations research techniques to the analysis of problems of business organization and performance. ECON 3112, *Econometrics*, introduces students to econometric analysis. Students gain the ability to estimate econometric models, interpret econometric output, write basic code for econometric software, and understand the strengths and limitations of various econometric techniques. In addition to focusing on data mining, INFO 3237, *Business Analytics II*, focuses on

building predictive analytics and understanding of applying a variety of machine learning models. Students are equipped with the ability to apply business analytics to improve business decision making as they build and evaluate predictive analytics and become skilled in a powerful predictive analytics software.

As the BSBA in Business Analytics curriculum has evolved, so have the BSBA in Business Analytics student learning outcomes. Intended outcomes for students earning a BSBA with a major in Business Analytics degree from UNC Charlotte include:

1. Students will demonstrate the ability to apply econometric models to business/economic data.
2. Students will demonstrate knowledge of database design and implementation by building databases and queries.
3. Students will demonstrate the ability to make decisions using analytical skills.

Refer to Appendix II for the BSBA in Business Analytics assurance of learning curriculum map.

As evidenced throughout the curriculum and program student learning outcomes, the BSBA in Business Analytics programs focuses on teaching students the application of statistical modeling, data warehousing, data mining, programming, forecasting, and operations research techniques to analyze business problems and make decisions. Emphasis is placed on both the techniques and application of analytics. The BSBA in Business Analytics program teaches students how to use techniques and models to solve business problems, directly aligned with CIP code 52.1301.

STEM Designation Analysis

The Belk College of Business also conducted an analysis to determine whether the College's comparison schools (as identified through our AACSB International specialized accreditation) and UNC System business schools have STEM designated programs. The majority of the College's aspirant, comparable, and competitive business schools have STEM designated business programs. Appendix III provides an overview of the STEM designated programs that our aspirant, comparable, and competitive business schools offer, as well as those offered by other UNC System business schools.

Through further analysis we explored within this comparison school group whether schools that offer an undergraduate Business Analytics program or variation of this program through their business school have a STEM-designated CIP code. Appendix IV provides an overview of undergraduate business analytics programs at comparison institutions. Of the three schools within the comparison group that offer an undergraduate business analytics program, we were unable to identify any that have a STEM-designated CIP code.

As such, we examined the curriculum at four undergraduate Business Analytics programs that are advertised as being STEM-designated. As evidenced in the table below, our BSBA in Business Analytics curriculum requires much of the same content as these schools that fall within instruction areas highlighted in the 52.1301 CIP code.

Table 1. Major Course Content at Schools Offering an Undergraduate Business Analytics Program Under CIP Code 52.1301.

Topic	UNC Charlotte	Arizona State University	Auburn University	Drexel University	University of Kansas
Optimization Theory and Mathematical Techniques	2 required courses, 3 elective courses	2 elective courses	1 required courses, 2 elective courses	1 required course; 6 elective courses	1 required course, 1 elective course
Data Mining	2 required courses	3 required courses	1 required course	2 elective courses	1 required course
Data Warehousing	1 required course	1 required course, 1 required course	2 elective courses		
Stochastic and Dynamic Modeling	1 required course	2 required courses	1 required courses, 1 elective course	2 elective courses	1 required course, 1 elective course
Operations Analysis	1 required course, 1 elective course	2 elective courses	2 elective courses	2 elective courses	1 elective course
Design and Testing of Prototype Systems and Evaluation Models	1 required course, 1 elective course	1 elective courses		1 required course	1 required course

As the College strives to differentiate our programs while remaining competitive in the Carolinas, the STEM designation is one way to distinguish our program and differentiate it from other undergraduate Business Analytics programs.

As noted above, the STEM designation will help the College better serve international students, while signaling the high level of econometric and economic modeling content in the program to potential employers of all students. The STEM designation allows for a significant extension in the Optional Practical Training (OPT) period for international graduates wishing to live and work in the U.S. The extended OPT period can allow international students to be employed longer in the U.S. while working with companies to obtain a work visa.

Not only does the STEM designation have the potential to help UNC Charlotte's Belk College of Business attract more high-quality international students into our program, it will also help the UNC System achieve its strategic goal related to economic impact and community engagement: "While maintaining excellence in the delivery of a foundational liberal arts education, increase the number of high quality credentials awarded in health sciences, STEM, K-12 education, and other emerging regional workforce needs".[1]

[1] https://www.northcarolina.edu/sites/default/files/approved_definitions_goals_metrics_targets_january_2017_final.pdf

Appendix I: BSBA in Business Analytics Course Descriptions

Required:

ECON 3112, *Econometrics* (3). Econometric techniques, including simple and multiple least squares regression with problems and analyses.

INFO 3221, *Programming for Business Analytics* (3). A study of fundamental programming constructs and concepts required for solving data analytics problems. Course emphasizes the use of widely adopted industry platforms such as Python and R to extract, transform, and make use of business data.

INFO 3233, *Data and Information Management* (3). A study of an implementation of databases for business applications. Exploration of basic concepts of design and the use of SQL to create and manipulate corporate databases.

INFO 3236, *Business Analytics I* (3). Various data mining and business intelligence methods, such as rule-based systems, decision trees, and logistic regression. Query and reporting, online analytical processing (OLAP), and statistical analysis. Issues relating to modeling, storing, securing, and sharing the organizational data resources.

INFO 3237, *Business Analytics II* (3). This course will focus on building predictive analytics and understanding and applying a variety of machine learning models. The class will be hands-on and the emphasis will be placed on the "know-how" aspect – how to apply business analytics to improve business decision making.

Electives:

ECON 4112, *Econometrics II*, (3). Investigates advanced data analysis techniques commonly used by economists, focusing on applications, understanding the strengths and limitations of the methods involved, using statistical and econometric software, and interpreting results. Techniques covered include, but are not limited to, models for dependent variables that are binary in nature, estimation of nonlinear relationships, analysis of panel data (pooled cross-sectional and time series data), and consequences of violation of the classical linear regression model assumptions.

MKTG 3228, *Marketing Analytics* (3). Emphasis on analyzing interactions of consumers, firms, and society. Focus on interpreting results. Particular emphasis on analyzing data related to market response, customer segmentation, customer targeting, brand positioning, and price and promotion decisions.

OPER 3203, *Decision Modeling and Analysis* (3). Analytical approach to understanding the management process and solving management problems with emphasis on model formulation, solution techniques, and interpretation of results. Topics include: techniques such as linear,

integer, goal, and multi-objective programming; queuing theory and applications; decision support via Monte Carlo simulation; decision making under uncertainty and risk; decision trees; and multi-criteria decision making. Microsoft Excel is the main analytical tool.

BUSA 3000, *Topics in Business Analytics* (3). Topics from areas of business analytics.

BUSA 3400, *Business Analytics Internship* (3). Full- or part-time academic year internship in areas complementary to the concentration area of studies and designed to allow theoretical and course-based practical learning to be applied in a supervised industrial experience. Requires 50 hours of supervised employment per hour of credit. Each student's internship program must be approved by the supervising faculty. A proposal form must be completed and approved prior to registration and the commencement of the work experience. A student who is employed with applying for this Business Analytics internship may not earn internship credit through work for the current employer. May be used to meet requirements of a major elective, up to a maximum of three credit hours.

Appendix II: BSBA in Business Analytics Assurance of Learning Curriculum Map

Student Learning Outcomes and Effectiveness Measures	Where Assessment Occurs		
	ECON 3112 *Econometrics*	**INFO 3233** *Data and Information Management*	**INFO 3237** *Business Analytics II*
	Fall	Fall	Fall
1. Students will demonstrate the ability to apply econometric models to business/economic data.	**X**		
a. Students will demonstrate the ability to use econometric methods to inform decision-making.	X		
b. Students will demonstrate the ability to use regression output from statistical software to interpret business/economic data.	X		
c. Students will demonstrate the ability to use and interpret statistical tests of hypotheses.	X		
2. Students will demonstrate knowledge of database design and implementation by building databases and queries.		**X**	
a. Students will demonstrate the ability to develop a business database.		X	
b. Students will demonstrate the ability to build SQL queries.		X	
c. Students will demonstrate the ability to explain the principles of designing and implementing business databases.		X	
3. Students will demonstrate the ability to make decisions using analytical skills.			**X**
a. Students will demonstrate the ability to think analytically.			X
b. Students will demonstrate the ability to apply analytics techniques.			X
c. Students will demonstrate the ability to use analytics to solve business problems.			X

Appendix III: Other Business Schools with STEM Designated Programs

School	Comparison Group	STEM Designated Business Program	Program(s)
Georgia State University	Aspirant	Yes	• MS in Mathematical Risk Management (previously MS in Risk Management and Insurance, 27.0305) • MS in Analytics (52.1399) • MS in Information Systems (11.0101) • MBA, Business Analysis concentration (14.3701) • MBA, Information Systems concentration (11.0101) • Master of Actuarial Science (52.1304) • BBA in Actuarial Science (52.1304) • BBA in Computer Information Systems (11.0101)
University of Louisville	Aspirant	No	
University of Pittsburgh	Aspirant	Yes	• MS in Management Information Systems • MBA/MS in Management Information Systems
University of South Florida	Aspirant	Yes	• MS in Business Analytics/Information Systems (11.0501)
University of Texas at Dallas	Aspirant	Yes	• MS in Business Analytics (52.1399) • MS in Energy Management (52.1399) • MS in Financial Engineering and Risk Management (27.0305) • MS in Information Technology and Management (11.0401) • MS in Management Science (52.1301) • MS in Supply Chain Management (52.1301) • MS in Systems Engineering and Management (14.2701) • BS in Information Technology and Systems (11.0103) • BS in Supply Chain Management
Kent State University	Comparable	Yes	• MS in Business Analytics (52.1301)
Old Dominion University	Comparable	No	
Temple University	Comparable	Yes	• MS in Actuarial Science • MS in Business Analytics • MS in Financial Analysis and Risk Management • MS in Financial Engineering • MS in IT Auditing and Cyber-Security • MS in Statistics • BBA in Management Information Systems
University of Cincinnati	Comparable	Yes	• MS in Applied Economics • MS in Business Analytics • MS in Finance • MS in Information Systems • BS in Business Analytics • BS in Industrial Management
University of Colorado Denver	Comparable	Yes	• MS in Business Analytics (52.1301) • MS in Information Systems (11.0401)
University of Houston	Comparable	No	

School	Comparison Group	STEM Designated Business Program	Program(s)
University of Memphis	Comparable	Yes	• MS in Information Systems (11.0103) • Graduate Certificate in Business Project Management (11.1005) • Graduate Certificate in Business Intelligence and Analytics (52.1301)
University of Texas at San Antonio	Comparable	Yes	• PhD in Applied Statistics (27.0501) • MS in Applied Statistics (27.0501) • MS in Data Analytics (52.1302) • MS in Information Technology (11.0401) • BBA in Actuarial Science (52.1304) • BBA in Cyber Security (11.1003) • BBA in Management Science (52.1301)
University of Wisconsin-Milwaukee	Comparable	Yes	• PhD in Management Science (52.1399) • MS in Information Technology Management (11.0103)
Virginia Commonwealth University	Comparable	Yes	• MS in Computer and Information Systems Security (11.1003) • MS in Decision Analytics (52.1301) • MS in Information Systems (11.0401) • Graduate Certificate in Information Systems (11.0401) • BS in Information Systems (11.0401)
Appalachian State University	Competitive	Yes	• MS in Applied Data Analytics (11.0802) • Graduate Certificate in Business Analytics (11.0802)
Clemson University	Competitive	No	
East Carolina University	Competitive	Yes	• Graduate Certificate in Business Analytics (11.0802) • MS in Quantitative Economics and Econometrics (45.0603, not in business school)
Elon University	Competitive	Yes	• MS in Management (52.1301)
North Carolina State University	Competitive	Yes	• Masters of Financial Mathematics (27.0305) • MS in Analytics (11.0802)
Northeastern University	Competitive	Yes	• MS in Business Analytics (52.1302) • BS in Accounting (27.0101) • BS in Entrepreneurship and New Venture Management (27.0101) • BS in Finance (27.0101) • BS in Management (27.0101) • BS in Marketing (27.0101) • BS in Management Information Systems (27.0101) • BS in Supply Chain Management (27.0101)
Queens University	Competitive	No	
University of South Carolina	Competitive	Yes	• Graduate Certificate in Business Analytics (52.1302) • BSBA in Management Science (52.1301)
Wake Forest University	Competitive	Yes	• MS in Business Analytics
Winthrop University	Competitive	No	

School	Comparison Group	STEM Designated Business Program	Program(s)
Appalachian State University	UNC System	Yes	• MS in Applied Data Analytics (11.0802) • Graduate Certificate in Business Analytics (11.0802)
East Carolina University	UNC System	Yes	• Graduate Certificate in Business Analytics (11.0802) • MS in Quantitative Economics and Econometrics (45.0603, not in business school)
Elizabeth City State University	UNC System	No	
Fayetteville State University	UNC System	No	
North Carolina A&T State University	UNC System	No	
North Carolina Central University	UNC System	Yes	• BS in Computer Science and Business (11.0199)
North Carolina State University	UNC System	Yes	• Masters of Financial Mathematics (27.0305) • MS in Analytics (11.0802)
UNC Asheville	UNC System	No	
UNC Chapel Hill	UNC System	No	
UNC Charlotte	UNC System	Yes	• MS in Mathematical Finance (27.0305) • PSM in Data Science and Business Analytics (52.1399) • Graduate Certificate in Data Science and Business Analytics (52.1399)
UNC Greensboro	UNC System	Yes	• Masters in Information Technology and Management (11.0901) • BS in Information Systems and Supply Chain Management (11.0901)
UNC Pembroke	UNC System	No	
UNC Wilmington	UNC System	Yes	• MS in Computer Science and Information Systems (11.0101)
Western Carolina University	UNC System	No	
Winston-Salem State University	UNC System	Yes	• BS in Management Information Systems (11.0401)

Appendix IV: Undergraduate Business Analytics Programs at Comparison Institutions

School	Comparison Group	Undergraduate Business Analytics (or Similar) Majors within the Business School	STEM Designation
Georgia State University	Aspirant	No	--
University of Louisville	Aspirant	No	--
University of Pittsburgh	Aspirant	No	--
University of South Florida	Aspirant	Yes (Business Analytics and Information Systems)	No
University of Texas at Dallas	Aspirant	No	--
Kent State University	Comparable	No	--
Old Dominion University	Comparable	Yes	Unable to identify
Temple University	Comparable	No	--
University of Cincinnati	Comparable	Yes	Unable to identify
University of Colorado Denver	Comparable	No	--
University of Houston	Comparable	No	--
University of Memphis	Comparable	No	--
University of Texas at San Antonio	Comparable	No	--
University of Wisconsin-Milwaukee	Comparable	No	--
Virginia Commonwealth University	Comparable	No	--
Appalachian State University	Competitive	No	--
Clemson University	Competitive	No	--
East Carolina University	Competitive	No	--
Elon University	Competitive	No	--
North Carolina State University	Competitive	No	--
Northeastern University	Competitive	No	--
Queens University	Competitive	No	--
University of South Carolina	Competitive	No	--
Wake Forest University	Competitive	No	--
Winthrop University	Competitive	No	--
Appalachian State University	UNC System	No	--
East Carolina University	UNC System	No	--
Elizabeth City State University	UNC System	No	--
Fayetteville State University	UNC System	No	--
North Carolina A&T State University	UNC System	No	--
North Carolina Central University	UNC System	No	--
North Carolina State University	UNC System	No	--
UNC Asheville	UNC System	No	--
UNC Chapel Hill	UNC System	No	--
UNC Greensboro	UNC System	No	--
UNC Pembroke	UNC System	No	--
UNC Wilmington	UNC System	No	--
Western Carolina University	UNC System	No	--
Winston-Salem State University	UNC System	No	--