2012-2013 LONG SIGNATURE SHEET

UNC CHARLOTTE

Proposal Number: DSBA 04-05-13

Proposal Title: Establishment of a new post-baccalaureate certificate in Data Science and Business Analytics, and a new course, DSBA 6100 "Big Data Analytics for Competitive Advantage"

Originating Department: Belk College of Business/College of Computing and Informatics Data Science and Business Analytics Planning Committee

TYPE OF PROPOSAL: UNDERGRADUATE_____ GRADUATE__X___ UNDERGRADUATE & GRADUATE____
(Separate proposals sent to UCCC and Grad. Council)

DATE RECEIVED	DATE CONSIDERED	DATE FORWARDED	ACTION	SIGNATURES
4-5-13	4-5-13	4-8-13	*Approved*	**Committee Co- CHAIR** Cem Saydam
4-8-2013	4-15-2013	4-19-2013	*Approved*	**COLLEGE CURRICULUM COMMITTEE CHAIR** Steven Clark
			Approved	**COLLEGE FACULTY CHAIR (if applicable)** Rob Roby McGregor
			Approved	**COLLEGE DEAN** Steve Ott
			Approved	**GENERAL EDUCATION** (if applicable; for General Education courses) [print name here:]
			Approved	**UNDERGRADUATE COURSE & CURRICULUM COMMITTEE CHAIR** (for undergraduate courses only)
5-2-13	5-7-13	5-9-13	*Approved*	**GRADUATE COUNCIL CHAIR** (for graduate courses only) Rob Roby McGregor
				FACULTY GOVERNANCE ASSISTANT (Faculty Council approval on Consent Calendar)
				FACULTY EXECUTIVE COMMITTEE (if decision is appealed)

Revised 02/05/13
OAA/mjw

2012-2013 LONG SIGNATURE SHEET

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(Separate proposals sent to UCCC and Grad. Council)

DATE RECEIVED	DATE CONSIDERED	DATE FORWARDED	ACTION	SIGNATURES
4-5-13	4-5-13	4-8-13	*Approved*	**Committee Co- CHAIR** A. Srinivas Srinivas Akella
			Approved	**COLLEGE CURRICULUM COMMITTEE CHAIR** Heather Lipford print name here: Heather Lipford
			Approved	**COLLEGE FACULTY CHAIR (if applicable)** print name here: Dennis Livesay
			Approved	**COLLEGE DEAN** Yi Deng
			Approved	**GENERAL EDUCATION** (if applicable; for General Education courses) [print name here:]
			Approved	**UNDERGRADUATE COURSE & CURRICULUM COMMITTEE CHAIR** (for undergraduate courses only)
5-2-13	5-7-13	5-9-13	*Approved*	**GRADUATE COUNCIL CHAIR** (for graduate courses only) Rob Roy McGregor
				FACULTY GOVERNANCE ASSISTANT (Faculty Council approval on Consent Calendar)
				FACULTY EXECUTIVE COMMITTEE (if decision is appealed)

Revised 02/05/13
OAA/mjw

UNC CHARLOTTE

LONG FORM
COURSE AND CURRICULUM PROPOSAL

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*To: Graduate Council Chair

From: Data Science and Business Analytics Planning Committee

Date: April 8, 2013

Re: Establishment of a new post-baccalaureate certificate in Data Science and Business Analytics, and a new course, DSBA 6100 "Big Data Analytics for Competitive Advantage"

Proposal Number: DSBA 04-05-13

Proposal Title: Establishment of a new post-baccalaureate certificate in Data Science and Business Analytics and a new course DSBA 6100 "Big Data Analytics for Competitive Advantage"

Originating Department: Data Science and Business Analytics Planning Committee

TYPE OF PROPOSAL: UNDERGRADUATE_____ GRADUATE__X___ UNDERGRADUATE & GRADUATE____

DSBA 04-05-13

UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE

NEW GRADUATE COURSE PROPOSAL FROM THE DATA SCIENCE AND BUSINESS ANALYTICS PLANNING COMMITTEE OF THE BELK COLLEGE OF BUSINESS AND THE COLLEGE OF COMPUTING AND INFORMATICS

TITLE: Data Science and Business Analytics Certificate and New Course

A. Proposal Summary

1. SUMMARY

The Belk College of Business and the College of Computing and Informatics proposes to add a new interdisciplinary, post-baccalaureate certificate in Data Science and Business Analytics and a new course for that certificate program, DSBA 6100, "Big Data Analytics for Competitive Advantage. The DSBA course prefix is also created by this proposal.

B. Justification

1. Identify the need addressed by the proposal and explain how the proposed action meets the need.

The proposed Data Science and Business Analytics (DSBA) certificate closely aligns with the UNC Charlotte mission as North Carolina's urban research university. It strongly supports the university's focus on community engagement, professional programs, and economic development for the Charlotte region and aligns with the missions of the two participating Colleges: Belk College of Business (BCOB) and College of Computing and Informatics (CCI). The joint certificate program in Data Science and Business Analytics combine the strengths of both colleges and helps address the strong demand for employees with data science and business analytics training. A study by the McKinsey Global Institute (May 2011) estimates that U.S. organizations will create 290,000 to 340,000 "big data" jobs by 2018. More than half of those jobs will go unfilled with present production of workers in this area. The proposed certificate is a first step in addressing this need. The certificate program is designed to graduate students well equipped for employment in a wide variety of data intensive industries such as financial services, energy, retail/supply chain and health care, where the need for business analysts with quantitative and computational skills is growing at an explosive pace.

The DSBA 6100 course "Big Data Analytics for Competitive Advantage" serves as the first course in the DSBA certificate program. The course provides an introduction to data science and business analytics tools and issues while addressing the need for students to understand the effect of the big data revolution in transforming industries, creating new markets and changing business strategy. All other courses that are proposed for the DSBA certificate are currently taught by either the Belk College of Business or the College of Computing and Informatics.

2. Discuss prerequisites/co-requisites for course(s) including class-standing, admission to the major, GPA, or other factors that would affect a student's ability to register.

   Pre-requisite: There are no prerequisites for the DSBA 6100 course beyond the requirements for entry into the DSBA certificate program or approval of the DSBA Certificate Program Director.

   The certificate in DSBA is open to all students who hold a B.S. or M.S. degree in any scientific, engineering or business discipline and either

   - are enrolled and in good standing in a graduate degree program at UNC Charlotte or
   - complete their undergraduate degree with a minimum 3.0 GPA.

   In addition, the program requires a current working knowledge of at least one higher-level (procedural) language; and a familiarity with computer applications. The following minimal background in mathematics is also required: two semesters of calculus and one semester of statistics. Individuals who have worked at a high professional level in the computer industry or business may be able to substitute work experience for specific subject area admission requirements. Individuals without a business degree or business experience will be required to complete an online business fundamentals course prior to enrolling in the program.

3. Demonstrate that course numbering is consistent with the level of academic advancement of students for whom it is intended.

   The course number will be DSBA 6100. This number positions the course as a graduate level course that is the first course in the certificate sequence.

4. In general, how will this proposal improve the scope, quality and/or efficiency of programs and/or instruction?

   The DSBA certificate will formalize the interdisciplinary collaboration between the Belk College of Business and the College of Computing and Informatics to prepare students for opportunities in data science and business analytics. Belk College faculty and

departments will bring business process knowledge and the application of analytics and the College of Computing and Informatics will bring faculty and departments with expertise in informatics, analytics, security, knowledge discovery, and complex modeling. Quality, scope and efficiencies are realized by combining the skills and resources of these two colleges and faculty.

The proposed course is an introductory course for the DSBA certificate. It will fill the needs for grounding students in big data analytics tools, issues and business strategic implications. This course will also be required course for the proposed Professional Science Masters in Data Science and Business Analytics. Offering this course will help us develop curriculum for that new degree program.

The course has not been offered previously.

C. Impact

1. What group(s) of students will be served by this proposal? (Undergraduate and/or graduate; majors and/or non-majors, others? Explain). Describe how you determine which students will be served.

   The certificate in DSBA is open to all students who hold a B.S. or M.S. degree in any scientific, engineering or business discipline and either

   - are enrolled and in good standing in a graduate degree program at UNC Charlotte or
   - complete their undergraduate degree with a minimum 3.0 GPA.

   The proposed DSBA 6100 course will initially primarily serve students enrolled in the DSBA certificate program. It is anticipated that, as the Belk College of Business and College of Computing and Informatics jointly develop a new Professional Science Masters in Data Science and Business Analytics program this course will serve those students as well. While priority will be given to students enrolled in the DSBA certificate program, the course would also be available to MBA students in the Business Analytics concentration as well as students in College of Computing and Informatics master's programs on a space available basis.

2. What effect will this proposal have on existing courses and curricula?

   a. When and how often will added course(s) be taught?

      The DSBA 6100 course will be offered in the Fall semesters and on demand.

   b. How will the content and/or frequency of offering of other courses be affected?

The DSBA certificate will primarily utilize current course offerings from the College of Computing and Informatics and the Belk College of Business. The current schedule of course offerings and sections would be satisfactory to meet the needs of the DSBA certificate.

This required course has been carefully constructed to complement existing graduate courses in the Belk College and the College of Computing and Informatics. The majority of the course content does not overlap with any other data science or business analytics course in either college. There will be minimal impact on the frequency of other offerings and enrollment in other courses.

c. What is the anticipated enrollment in course(s) added (for credit and auditors)?

Anticipated enrollment:
20 students per year in the DSBA Certificate program.
20 students per offering of the DSBA 6100 class.

d. How will enrollment in other courses be affected? How did you determine this?

We expect minimal impact of the DSBA 6100 class on the enrollment of other classes. Since the certificate program is expected to serve around 20 students per year and only requires one existing course from the Belk College of Business (MBAD 6201) and one from the College of Computing and Informatics (ITCS 6160), current course offerings should be able to absorb the additional demand.

e. Identify other areas of catalog copy that would be affected, including within other departments and colleges (e.g., curriculum outlines, requirements for the degree, prerequisites, articulation agreements, etc.)

There will be no other changes unless programs choose to include DSBA 6100.

D. Resource Required to Support Proposal

1. Personnel

   a. No new faculty will be required. The existing faculty members are qualified and interested in teaching this course.
   b. Qualified faculty members interested in teaching in the DSBA certificate program include:

College of Computing and Informatics
Zbigniew Ras, Professor of Computer Science
Srinivas Akella, Associate Professor of Computer Science
Wensheng Wu, Assistant Professor of Computer Science

Wlodek Zadrozny, Associate Professor of Computer Science
Jing Yang, Assistant Professor of Computer Science
Mirsad Hadzikadic, Professor of Software and Information Systems
Xintao Wu, Professor of Software and Information Systems
David Wilson, Associate Professor of Software and Information Systems
Mohamed Shehab, Assistant Professor of Software and Information Systems

Belk College of Business
Chandrasekar Subramaniam, Associate Professor of Management Information Systems
Monica Johar, Assistant Professor of Management Information Systems
Kexin Zhao, Assistant Professor of Management Information Systems
Cem Saydam, Professor of Operations Management
Antonis Stylianou, Professor of Management Information Systems
Ram Kumar, Professor of Management Information Systems

c. Qualified faculty members interested in teaching the DBA 6100 class include

College of Computing and Informatics
Wlodek Zadrozny, Associate Professor of Computer Science
Srinivas Akella, Associate Professor of Computer Science
Wensheng Wu, Assistant Professor of Computer Science

Belk College of Business
Chandrasekar Subramaniam, Associate Professor of Management Information Systems
Monica Johar, Assistant Professor of Management Information Systems
Kexin Zhao, Assistant Professor of Management Information Systems
Cem Saydam, Professor of Operations Management
Antonis Stylianou, Professor of Management Information Systems

2. Physical Facility

No unusual requirement is anticipated. Master classrooms will be suitable for these courses.

3. Equipment and Supplies

No new equipment or supplies will be required.

4. Computers

Students will make use of existing University facilities.

5. Audio-Visual

No new resources will be required.

6. Other Resources

   None.

7. Source of funding

   No new funding will be required.

E. Consultation with the Library and Other Departments or Units

1. Library Consultation

   a. Written consultation with Library Reference Personnel was initiated on __4/5/2013_. Library consultation was received 4/8/2013 and is attached.

   b. Reference Librarian's evaluation of adequacy of holdings:

   Evaluator: Nicole Spoor Date: 4/8/2013
   Check one of:

   (1) Holdings are superior _____

   (2) Holdings are adequate __X___

   (3) Holdings are adequate only if department purchases additional materials _____

   (4) Holdings are inadequate _____

2. Consultation with other departments or units

   None needed. Since both colleges have put forward this proposal, no additional consultation was determined to be necessary.

F. Initiation and Consideration of the Proposal

1. Originating Unit

   The Data Science and Business Analytics planning committee approved the proposal unanimously on 4/5/2013.

2. The Belk College Graduate Committee approved the proposal on _4/19/2013_____.

3. The College of Computing and Informatics College Curriculum Committee approved the proposal on _4/15/2013_.

4. The College of Business Administration Faculty approved the proposal on __4/26/2013_.

5. The College of Computing and Informatics Faculty approved the proposal on 4/26/2013_.

G. Attachments

1. Library Consultation for both the certificate and DSBA 6100 course (attached)
2. Course Syllabus (attached)
3. Proposed Catalog Copy for the certificate (attached)
4. Proposed Catalog Copy for the course (attached)
5. Academic plan of study (attached)
6. Student learning outcomes and assessment plan (attached)
7. Textbook costs (to be determined)

UNC CHARLOTTE
J. Murrey Atkins Library

Consultation on Library Holdings

To: Dr. Christie Amato

From: Nicole Spoor

Date: April 8, 2013

Subject: Establishment of a Certificate in Data Science and Business Analytics

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Summary of Librarian's Evaluation of Holdings:

Evaluator: Nicole Spoor, Business Librarian **Date:** April 8, 2013

Please Check One:

1. Holdings are superior ☐
2. Holdings are adequate ☒
3. Holdings are adequate only if dept. purchases additional items ☐
4. Holdings are inadequate ☐

Comments:
After a thorough evaluation of Atkins Library resources with regards to journals, databases, and circulating books that are relevant to the establishment of a Certificate in Data Science and Business Analytics, it is found that the library's resources are sufficient to support this new certificate.

The following table shows the print source holdings that are relevant to a Certificate in Data Science and Business Analytics. After performing multiple searches of the catalog, it is found that there are adequate resources related to Data Science and Business Analytics. Individual books not owned by the library may be requested through the library's interlibrary loan service.

Catalog Searches Performed	Total Results	Results Less Than 5 Years Old
Data AND Business	2524	339
Big Data	14	13
Business Analytics	55	36
Innovation AND (Business OR Industry)	1348	487
Network Science	596	174

Print sources will not be the most relevant resource for this certificate. Databases containing current research will prove more useful for students. The following is a list of selected databases that may be relevant to Data Science and Business Analytics to which Atkins Library provides access:

Business Source Complete
EconLit
IEEE Xplore
INSPEC
JSTOR
Lexis Nexis Academic
ScienceDirect
SimplyMap

Atkins Library also has access to several journal titles that may be relevant to Data Science and Business Analytics. Journal articles not owned by the library may be requested through the library's interlibrary loan service.

Business Intelligence Journal
Business Intelligence Review
Data and Knowledge Engineering
Journal of Data Management
Innovation: The Magazine of Research & Technology
Innovation: Management, Policy and Practice

Conclusion:
The holdings of Atkins Library with regards to print resources, databases and journals are sufficient to support the establishment of a Certificate in Data Science and Business Analytics. It is suggested that the participating academic departments continue ordering new resources as they are published.

Evaluator's Signature: Nicole Spoor, Business Librarian, Atkins Library

Date: April 8, 2013

UNCCHARLOTTE
J. Murrey Atkins Library

Consultation on Library Holdings

To: Dr. Christie Amato

From: Nicole Spoor

Date: April 8, 2013

Subject: DSBA 6100: Big Data Analytics for Competitive Advantage

---

Summary of Librarian's Evaluation of Holdings:

Evaluator: Nicole Spoor, Business Librarian Date: April 8, 2013

Please Check One:

1. Holdings are superior ☐
2. Holdings are adequate ☒
3. Holdings are adequate only if dept. purchases additional items ☐
4. Holdings are inadequate ☐

Comments:
After a thorough evaluation of Atkins Library resources with regards to journals, databases, and circulating books that are relevant to the establishment of DSBA 6100: Big Data Analytics for Competitive Advantage, it is found that the library's resources are sufficient to support this new course.

The following table shows the print source holdings that are relevant to Big Data Analytics for Competitive Advantage. After performing multiple searches of the catalog, it is found that there are adequate resources related to Big Data Analytics for Competitive Advantage. Individual books not owned by the library may be requested through the library's interlibrary loan service.

Catalog Searches Performed	Total Results	Results Less Than 5 Years Old
Data Analytics	53	35
Data Visualization	226	62
Data AND Decision Making	510	125
Analytics AND (Customer OR Social Media)	32	20
Analytics AND Innovation	279	116

Print sources will not be the most relevant resource for this course. Databases containing current research will prove more useful for students. The following is a list of selected databases that may be relevant to Big Data Analytics for Competitive Advantage to which Atkins Library provides access:

Business Source Complete
EconLit
IEEE Xplore
INSPEC
JSTOR
Lexis Nexis Academic
ScienceDirect
SimplyMap
Web of Knowledge

Atkins Library also has access to several journal titles that may be relevant to Big Data Analytics for Competitive Advantage. Journal articles not owned by the library may be requested through the library's interlibrary loan service.

Data and Knowledge Engineering
Journal of Data Management
Innovation: The Magazine of Research & Technology
Innovation: Management, Policy and Practice

Conclusion:
The holdings of Atkins Library with regards to print resources, databases and journals are sufficient to support the establishment of DSBA 6100: Big Data Analytics for Competitive Advantage. It is suggested that the participating academic departments continue ordering new resources as they are published.

Evaluator's Signature: Nicole Spoor, Business Librarian, Atkins Library

Date: April 8, 2013

Syllabus

DSBA 6100: Big Data Analytics for Competitive Advantage

1. Course Number and Title
   DSBA 6100: Big Data Analytics for Competitive Advantage

2. Course Description
   DSBA 6100: Big Data Analytics for Competitive Advantage (3). This course provides an introduction to the use of big data as a strategic resource. A focus is placed on integrating the knowledge of analytics tools with an understanding of how companies leverage data analytics to gain strategic advantage. A case approach will be used to emphasize hands-on learning and real-world view of big data analytics. (Fall, On Demand).

3. Pre- or Co-requisites
   Admission to the DSBA Certificate Program or permission of the DSBA Certificate Program director.

Objectives of the Course

1. Understand the role of big data analytics in organizational strategy and how these organizations can leverage information to gain competitive advantage.

2. Gain an introductory knowledge of the data science and business analytics tools that are useful in extracting intelligence and value from data.

3. Apply big data analytics tools to reveal business opportunities and threats.

4. Using actual business cases, develop data-driven strategies that enhance stakeholder relationships, open new market opportunities, and/or better position the organization for competitive advantage during industry transition.

4. Instructional Method
   This course will take a case approach, complemented by lectures, seminar style discussion and outside speakers. The course will be team-taught by a faculty member from the Belk College of Business and a faculty member from the College of Computing and Informatics.

5. Means of student evaluation
   The students will be evaluated through projects and exams.
   a. Two exams equals 20% each, two assignments equals 15% each, and a group case analysis equals 30%, for a total 100% of grade.

6. Specify policies that apply to this course:
    a. University integrity

        Students have the responsibility to know and observe the requirements of The UNC Charlotte Code of Student Academic Integrity. Please see: http://integrity.uncc.edu/.This code forbids cheating (sharing work/answers), fabrication or falsification of information, multiple submissions of the same academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty. Students who violate the code can be expelled from UNC Charlotte. The normal penalty for a first offense is zero credit on the work involving dishonesty and further substantial reduction of the course grade. In almost all cases the course grade is reduced to U. Standards of integrity will be enforced in this course. Students are expected to report cases of academic dishonesty to the instructor.

    b. Attendance

        Students are required to know the content from all class discussions and reading assignments. Much of the learning in this course will occur in class as participants learn how to use business analytics techniques and address strategic issues. Thus, attendance is expected for all class sessions. If students find themselves unable to attend class, they are responsible for getting notes on the missed material. Classes are value-added in nature compared to the reading assignments. Just reading the posted articles and class notes will not be sufficient to do well in the course.

    c. Grading policy

        Grades will be calculated on an A (90% and above), B (80-89.9%), C (70-79.9%), Unsatisfactory (less than 70%) scale.

7. Probable textbooks or resources
    a. Thomas H. Davenport and Jeanne G. Harris. (2007) *Competing on Analytics: The New Science of Winning,* New York: John Wiley and Sons, *ISBN:* 978-1422103326. (D&H)
    b. Jean-Paul Isson and Jesse Harriott. (2012) *Win with Advanced Business Analytics: Creating Business Value from Your Data,* New York: John Wiley and Sons, *ISBN:* 978-1118370605. (I&H)
    c. Harvard cases.

d. Industry reports.

9. Topic outline of course content (for class meeting once a week):

Week	Topic	Reading
Week 1	Introduction to Big Data Analytics Team Building Exercise	
Week 2	Big Data Revolution; the power of information; bringing together computing & business processes	Current readings I & H Ch. 1
Week 3	Big and Little Data: Different Types of Intelligence; data-driven decision-making	I&H Chs. 4 & 5; case studies
Week 4	Intro. to methods for extracting knowledge & value (data mining, knowledge discovery, etc.); Applying these methods to business	Tools; examples
Week 5	Analytics and Business Performance Business Performance Tracking: Execution and Measurement	D&H Ch. 3 I&H Ch. 16
Week 6	Competing on Analytics ; Big data—Big payoffs	D&H Chs. 4 & 5 Examples; cases
Week 7	Unstructured Data Analytics: The Next Frontier; methods and applications	I&H Ch. 18 Readings; cases
Week 8	Midterm Exam	--
Week 9	Data Visualization &visual analytics: Creating usable knowledge from Information	I&H Ch. 6; tools; cases
Week 10	Voice-of-the-Customer Analytics and Insight Social Media Analytics Mobile Analytics	Tools; applications I&H Ch. 8 I&H Ch. 12 I&H Ch. 14
Week 11	Effective Predictive Analytics Methods for scaling up to big data (e.g., Hadoop, NoSQL, visual analytics, etc.) Using the tools	I&H Chs. 10 & 11 I&H Ch. 13 Tools (computational and statistical)
Week 12	Analytics Implementation: What Works and What Does Not Leveraging Digital Analytics &	I&H Ch. 7 I&H Ch. 9

	Computation Effectively	
Week 13	Effective Analytics Communications; knowing what you know & presenting what you know.	I&H Ch. 16
Week 14	Analytics & Innovation Future of Analytics	I&H Ch. 17 I&H Ch. 18 Readings
Week 15	Final Exam	--
Week 16	Presentation & discussion of group case studies	--

Proposed Catalog Copy for Certificate

Graduate Certificate Program in Data Science and Business Analytics

The purpose of the Graduate Certificate in Data Science and Business Analytics is to provide post-baccalaureate students with the opportunity to reach a demonstrated level of competence in the area of data science and business analytics. The certificate requires fifteen (15) graduate credit-hours of coursework. The certificate may be pursued concurrently with a related graduate degree program at UNC Charlotte.

Admission Requirements

The certificate in DSBA is open to all students who hold a B.S. or M.S. degree in any scientific, engineering or business discipline and either

- are enrolled and in good standing in a graduate degree program at UNC Charlotte or
- complete their undergraduate degree with a minimum 3.0 GPA.

In addition, the program requires a current working knowledge of at least one higher-level (procedural) language; and a familiarity with computer applications. The following minimal background in mathematics is also required: two semesters of calculus and one semester of statistics. Individuals who have worked at a high professional level in the computer industry or business may be able to substitute work experience for specific subject area admission requirements. Individuals without a business degree or business experience will be required to complete an online business fundamentals course prior to enrolling in the program.

Transfer credit from another institution will not be accepted into this proposed certificate program.

Students pursuing the MS in Computer Science, MS in Information Technology and MBA degrees will have priority on space in the corresponding CS, SIS and MBA classes should demand for the proposed certificate exceed expectations.

Program Requirements

The certificate will be awarded upon completion of five graduate level courses (15 credits) in the area of data science and business analytics. A cumulative GPA of 3.0 will be required and at most one course with a grade of C may be allowed towards the certificate.

Students must take five courses, as outlined below, to receive the Graduate Certificate in Data Science and Business Analytics:

Core requirements:
DSBA 6100 Big Data Analytics for Competitive Advantage (3)
ITCS 6160 Data Base Systems (3)
MBAD 6201 Business Intelligence and Analytics (3)

One of the following courses:
ITCS 5122 Visual Analytics (3)

IT IS 6520 Network Science (3)

One of the following courses:
MBAD 6122 Decision Modeling and Analysis (3)
MBAD 6211 Advanced Business Analytics (3)
MBAD 6276 Consumer Analytics (3)

Proposed Catalog Copy for DSBA 6100 Course

DSBA 6100: Big Data Analytics for Competitive Advantage (3). This course provides an introduction to the use of big data as a strategic resource. A focus is placed on integrating the knowledge of analytics tools with an understanding of how companies leverage data analytics to gain strategic advantage. A case approach will be used to emphasize hands-on learning and real-world view of big data analytics. (Fall, On Demand).

For a new course or revisions to an existing course, check all the statements that apply:

____ This course will be cross listed with another course.
____ There are prerequisites for this course.
____ There are co-requisites for this course.
____ This course is repeatable for credit.
____ This course will increase/decrease the number of credits hours currently offered by its program.
____ This proposal results in the deletion of an existing course(s) from the degree program and/or catalog.

Student Learning Outcomes for the Graduate Certificate in Data Science and Business Analytics

The learning outcomes for the Graduate Certificate in Data Science and Business Analytics are as follows:

1. Students will demonstrate knowledge of big data analytics in organizational strategy and how these organizations can leverage information to gain competitive advantage. (Assessed in DSBA 6100)
2. Students will demonstrate knowledge of conceptual and theoretical aspects of database systems and apply that knowledge to practical development and implementation of information systems on top of database systems. (Assessed in ITCS 6160)
3. Students will demonstrate knowledge of issues relating to modeling, using, and storing data and will apply this knowledge of data mining methods. (Assessed in MBAD 6201)

UNC CHARLOTTE

2013-14 Student Learning Outcomes Assessment Plan and Report

(Document student learning outcomes assessment plans and assessment data for each undergraduate and graduate degree program and certificate program, stand alone minor, and distance education program offered online only.)

College: Belk College of Business and the College of Computing and Informatics

Department: BCOB Department of Business and Information Systems and Operation Management and CCI Department of Computer Science

Name of Degree or Certificate Program/Stand Alone Minor/Online Distance Education Program: Data Science and Business Analytics Graduate Certificate

Reflection on the Continuous Improvement of Student Learning

1. List the changes and improvements your program planned to implement as a result of last year's student learning outcomes assessment data.
2. Were all of the changes implemented? If not, please explain.
3. What impact did the changes have on student learning?

n/a – this is a new assessment plan for the proposed DSBA graduate certificate

Student Learning Outcome 1
(knowledge, skill or ability to be assessed)

Students will demonstrate knowledge of big data analytics in organizational strategy and how these organizations can leverage information to gain competitive advantage.

Changes to the Student Learning Outcomes Assessment Plan: If any changes were made to the assessment plan (which includes the Student Learning Outcome, Effectiveness Measure, Methodology and Performance Outcome) for this student learning outcome since your last report was submitted, briefly summarize the changes made and the rationale for the changes.

n/a

Effectiveness Measure: Identify the data collection instrument, e.g., exam, project, paper, etc. that will be used to gauge acquisition of this student learning outcome and explain how it assesses the desired knowledge, skill or ability. A copy of the data collection instrument and any scoring rubrics associated with this student learning outcome are to be submitted electronically to the designated folder on the designated shared drive.

The instrument used to assess student mastery of this learning outcome will include questions embedded in course exams. Specifically, the questions will gauge students' mastery of the following effectiveness measures:

1. Students will demonstrate knowledge of the data science and business analytics tools that are useful in extracting intelligence and value from data.

2. Students will demonstrate the ability to apply big data analytics tools to reveal business opportunities and threats.
3. Students will demonstrate the ability to develop data-driven strategies.

Methodology: Describe when, where and how the assessment of this student learning outcome will be administered and evaluated. Describe the process the department will use to collect, analyze and disseminate the assessment data to program faculty and to decide the changes/improvements to make on the basis of the assessment data.

This SLO will be measured in DSBA 6100, Big Data Analytics for Competitive Advantage, every other Fall semester.

Student performance for each of the effectiveness measures will be assessed using questions embedded in course exams. Students that answer 80% of the questions associated with each effectiveness measure correctly will be deemed to have satisfied learning related to that effectiveness measure.

Program faculty members are responsible for collecting assessment data. Program faculty report(s) individual student assessment results to the Belk College of Business Assurance of Learning [AoL] Data Center. The Data Center collects and combines the program's assessment data from across multiple courses and sections. The Data Center then aggregates the data and returns statistical results to all program faculty. Program faculty members analyze these results and hold a closing the loop meeting following the semester in which assessment was conducted to complete the continuous improvement process. At this meeting, program faculty determine what changes or improvements should be made to instruction, the program, individual courses, or to the assessment process. Changes are implemented the next time the course is taught.

Performance Outcome: Identify the percentage of students assessed that should be able to demonstrate proficiency in this student learning outcome and the level of proficiency expected. *Example: 80% of the students assessed will achieve a score of "acceptable" or higher on the Oral Presentation Scoring Rubric.* (Note: a copy of the scoring rubric, complete with cell descriptors for each level of performance, is to be submitted electronically to the designated folder on the designated shared drive.)

With respect to each of the effectiveness measures,

1. 80% of students assessed will answer 80% of exam questions correctly to demonstrate knowledge of the data science and business analytics tools that are useful in extracting intelligence and value from data.
2. 80% of students assessed will answer 80% of exam questions correctly to demonstrate the ability to apply big data analytics tools to reveal business opportunities and threats.
3. 80% of students assessed will answer 80% of exam questions correctly to demonstrate the ability to develop data-driven strategies.

Fall 2012 Assessment Data	**Spring 2013-Fall 2013 Assessment Data**
n/a	n/a

Plans for 2014-15: Based upon the 2013 assessment data included in this annual report, what changes/improvements will the program implement during the next academic year to improve performance on this student learning outcome?

n/a

Assessment Lead's Comments on Student Learning Outcome 1:

n/a

Student Learning Outcome 2
(knowledge, skill or ability to be assessed)

Students will demonstrate knowledge of conceptual and theoretical aspects of database systems and apply that knowledge to practical development and implementation of information systems on top of database systems.

Changes to the Student Learning Outcomes Assessment Plan: If any changes were made to the assessment plan (which includes the Student Learning Outcome, Effectiveness Measure, Methodology and Performance Outcome) for this student learning outcome since your last report was submitted, briefly summarize the changes made and the rationale for the changes.

n/a

Effectiveness Measure: Identify the data collection instrument, e.g., exam, project, paper, etc. that will be used to gauge acquisition of this student learning outcome and explain how it assesses the desired knowledge, skill or ability. A copy of the data collection instrument and any scoring rubrics associated with this student learning outcome are to be submitted electronically to the designated folder on the designated shared drive.

The instruments used to assess student mastery of this learning outcome will include homework assignments and questions embedded in course exams. Specifically, the instruments will gauge students' mastery of the following effectiveness measures:

1. Students will demonstrate knowledge of database system modeling.
2. Students will demonstrate knowledge of database system programming.
3. Students will demonstrate the ability to implement database systems.

Methodology: Describe when, where and how the assessment of this student learning outcome will be administered and evaluated. Describe the process the department will use to collect, analyze and disseminate the assessment data to program faculty and to decide the changes/improvements to make on the basis of the assessment data.

This SLO will be measured in ITCS 6160, Database Systems, every other Fall semester.

Student performance for the first and second effectiveness measures will be assessed using questions embedded in course exams. Students that answer 80% of the questions associated with each effectiveness measure correctly will be deemed to have satisfied learning related to that effectiveness measure.

Student performance for the third effectiveness measure will be assessed using homework assignments. The homework assignments will be scored using a four point rubric, where a score of 1 is "inadequate" and a score of 4 is "exceeds expectations". Students that earn a 3 (meets expectations) or 4 (exceeds expectations) will be deemed to have demonstrated the ability to implement database systems.

Program faculty members are responsible for collecting assessment data. Program faculty report(s) individual student assessment results to the Belk College of Business Assurance of Learning [AoL] Data Center. The Data Center collects and combines the program's assessment data from across multiple courses. The Data Center then aggregates the data and returns statistical results to all program faculty. Program faculty members analyze these results and hold a closing the loop meeting following the semester in which assessment was conducted to complete the continuous improvement process. At this meeting, program faculty determine what changes or improvements should be made to instruction, the program, individual courses, or to the assessment process. Changes are implemented the next time the course is taught.

Performance Outcome: Identify the percentage of students assessed that should be able to demonstrate proficiency in this student learning outcome and the level of proficiency expected. *Example: 80% of the students assessed will achieve a score of "acceptable" or higher on the Oral Presentation Scoring Rubric.* (Note: a copy of the scoring rubric, complete with cell descriptors for each level of performance, is to be submitted electronically to the designated folder on the designated shared drive.)
With respect to each of the effectiveness measures, 1. 80% of students assessed will answer 80% of exam questions correctly to demonstrate knowledge of database system modeling. 2. 80% of students assessed will answer 80% of exam questions correctly to demonstrate knowledge of database system programming. 3. 80% of students assessed will earn a score of '3' or '4' on homework assignments to demonstrate the ability to implement database systems.

Fall 2012 Assessment Data	**Spring 2013-Fall 2013 Assessment Data**
n/a	n/a

Plans for 2014-15: Based upon the 2013 assessment data included in this annual report, what changes/improvements will the program implement during the next academic year to improve performance on this student learning outcome?
n/a

Assessment Lead's Comments on Student Learning Outcome 2:
n/a

Student Learning Outcome 3 (knowledge, skill or ability to be assessed)
Students will demonstrate knowledge of issues relating to modeling, using, and storing data and will apply this knowledge of data mining methods.

Changes to the Student Learning Outcomes Assessment Plan: If any changes were made to the assessment plan (which includes the Student Learning Outcome, Effectiveness Measure, Methodology and Performance Outcome) for this student learning outcome since your last report was submitted, briefly summarize the changes made and the rationale for the changes.
n/a

Effectiveness Measure: Identify the data collection instrument, e.g., exam, project, paper, etc. that will be used to gauge acquisition of this student learning outcome and explain how it assesses the desired knowledge, skill or ability. A copy of the data collection instrument and any scoring rubrics associated with this student learning outcome are to be submitted electronically to the designated folder on the designated shared drive.
The instruments used to assess student mastery of this learning outcome will include assignments and exams. Specifically, the instruments will gauge students' mastery of the following effectiveness measures: 1. Students will demonstrate the ability to design the storage and extraction of data. 2. Students will demonstrate the ability to apply data mining methods such as association rule mining,

decision trees and ROC curves.

Methodology: Describe when, where and how the assessment of this student learning outcome will be administered and evaluated. Describe the process the department will use to collect, analyze and disseminate the assessment data to program faculty and to decide the changes/improvements to make on the basis of the assessment data.

This SLO will be measured in MBAD 6201, Business Intelligence and Analytics, every other Fall semester.

Student performance for the first effectiveness measure will be assessed using assignments and exams in which students will design a data warehouse schema and provide detailed operations for extraction of different types of data based on the context. These questions will be graded and scores greater than 90 percent will be exceeds expectations, students earning 80 percent will be meets expectation and below 80 percent will be considered below expectations. Students earning an 80% or higher will be deemed to have demonstrated the ability to design the storage and extraction of data.

Student performance in the second effectiveness measure will be measured using assignments and exams in which students will mine and classify the data based on the appropriate methodology. These questions will be graded and scores greater than 90 percent will be exceeds expectations, students earning 80 percent will be meets expectation and below 80 percent will be considered below expectations. Students earning an 80% or higher will be deemed to have demonstrated the ability to apply data mining methods such as association rule mining, decision trees, and ROC curves.

Program faculty members are responsible for collecting assessment data. Program faculty report(s) individual student assessment results to the Belk College of Business Assurance of Learning [AoL] Data Center. The Data Center collects and combines the program's assessment data from across multiple courses. The Data Center then aggregates the data and returns statistical results to all program faculty. Program faculty members analyze these results and hold a closing the loop meeting following the semester in which assessment was conducted to complete the continuous improvement process. At this meeting, program faculty determine what changes or improvements should be made to instruction, the program, individual courses, or to the assessment process. Changes are implemented the next time the course is taught.

Performance Outcome: Identify the percentage of students assessed that should be able to demonstrate proficiency in this student learning outcome and the level of proficiency expected. *Example: 80% of the students assessed will achieve a score of "acceptable" or higher on the Oral Presentation Scoring Rubric.* (Note: a copy of the scoring rubric, complete with cell descriptors for each level of performance, is to be submitted electronically to the designated folder on the designated shared drive.

With respect to each of the effectiveness measures,

1. 80% of students assessed will earn 80% or higher on the questions relating to storage and extraction of data.
2. 80% of students assessed will earn 80% or higher on the questions relating to data mining methods such as association rule mining, decision trees, and ROC curves.

Fall 2012 Assessment Data	**Spring 2013-Fall 2013 Assessment Data**
n/a	n/a

Plans for 2014-15: Based upon the 2013 assessment data included in this annual report, what changes/improvements will the program implement during the next academic year to improve performance on this student learning outcome?
n/a

Assessment Lead's Comments on Student Learning Outcome 3:
n/a

Assessment Lead's Overall Comments
n/a