Graduate Certificate in Data Analytics

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Objectives

The primary goal of the UNO graduate certificate program is to allow post-baccalaureate students and working professionals to expand their educational background and complete work that could count towards a graduate degree. The graduate certificates are designed primarily to extend students' understanding of the theory and practice in fields related to information systems, computer science, or information assurance. Students will apply and be admitted to the Graduate Certificate in Data Analytics and take 15 hours of graduate course work related to data analytics.

The Data Analytics Graduate Certificate

Data analytics uses a variety of techniques to examine large amounts of data to discover patterns that can lead to business insights. Data analytics has broad applicability in customer behavior analysis, fraud detection, scientific inquiry, process improvement, financial analysis, trend analysis, forecasting, and decision-making. Techniques may include statistical methods, data mining, modeling and simulation, and data visualization. The certificate is designed to equip students to apply the theory and practice of data analytics to solving problems in a variety of economic, social, and scientific domains.

Who is eligible?

Individuals with an undergraduate degree and one or two years of work experience in information technology or information management roles are eligible to apply for the graduate certificate.

Application process

1. Complete and submit the on-line graduate application form for admission. United States citizens should go to the Graduate Studies website and click on *Apply for Admission*. International students should apply on the International Admissions website.
2. Submit a detailed resume indicating your work experience and background.
3. Submit a writing sample from work or previous academic experiences. Alternatively, if you do not have writing sample, please submit a two page double-spaced word processed essay that addresses the following two topics:

a. Discussion of two accomplishments that demonstrate your potential for success in the graduate certificate program
b. Discussion of your unique personal qualities and life experiences that distinguish you from other applicants to our graduate certificate program.

Structure of the Graduate Certificate

The data analytics graduate certificate consists of two core courses (6 credits), one course each from Categories 1 and 2 (6 credits) and one elective (3 credits) for a total of 15 credit hours (all courses listed in curriculum below are three (3) hours each). Specific course requirements for the graduate certificate are described below. There are three prerequisite courses which may be waived by the chair of the Graduate Program Committee, based on courses already taken, applicable work experience, or the recommendation of faculty teaching the prerequisite courses.

Prerequisites

The following courses are prerequisites of the required courses. Elective courses may have additional prerequisites.
- CIST 2100 - Applications, Organizations, and Technology
- A single semester of undergraduate statistics or equivalent, e.g. CIST 2500
- A single semester of undergraduate database management or equivalent, e.g.
    - ISQA 3310 – Managing the Database Environment
    - ISQA 8050 – Data Organization and Storage
    - CSCI 4850 – Database Management Systems

Core Courses - 6 hours

If a core course is waived, it must be replaced with another course from the e options isted below.
- ISQA 8156 - Advanced Statistical Methods for IS&T
- ISQA 8206 - Information and Data Quality Management

Category Options—6 hours One course must be selected from Category 1; one course must be selected from Category 2;

Category 1

- ISQA 8340 – Applied Regression Analysis
- ISQA 9130 – Multivariate Data Analysis
- ISQA 9120 – Applied Experimental Design & Analysis
- MATH/CSCI 8306 – Deterministic Operations Research Models
- ECON 8310 – Business Forecasting

Category 2

- ISQA 8016 – Business Intelligence
- ISQA 8700 – Data Warehousing
- ISQA 8736 – Decision Support Systems
- CSCI 8350 – Data Warehousing and Data Mining

Elective (Choose one form list below or courses in Category 1 or 2 not alreqady taken)

- ISQA 8080 – Seminar in Management Information Systems (Topic MUST be related to analytics. Prior approval from the Graduate Program Committee is required to use this course in the concentration.)
- CSCI 8390 – Advanced Topics in DBMS
- CSCI 8476 – Pattern Recognition

Evidence of Demand

In recent years, interest and activity in data analytics have exploded. Innovations in mobile consumer devices, data acquisition and storage technologies, social media, and the so-called "Internet of Things" that generate and transmit data at unprecedented rates have created volumes of data that organizations can potentially use to great advantage. Organizations can use this data to improve insights into their customers, customize products and services, forecast future events and conditions, speed response to changing conditions, and create new business opportunities. However, there is a serious shortage of individuals with the knowledge and expertise needed to draw insights from large volumes of data. According to a McKinsey & Company report, "the United States alone will experience a shortage of 140,000 to 190,000 people with deep analytical skills as well as 1.5 million managers and analysts with the know-how to use the analysis of big data to make effective decisions."[1] Gartner researchers anticipate that 4.4 million big data jobs will be created globally by 2015, of which 1.9 million will be created in the United States. However, a limiting factor in this growth is a severe shortage of data analytics workers. The report claims that only a third of these jobs will be filled. "[Education] is failing us,"[2] reports Peter Sondergaard, Gartner's head of research.

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[1] Manyika, J., Chui, M., Brown, B., Bughin, J., Dobbs, R., Roxburgh, C., & Hung Byers, A. (2011). Big data: The next frontier for innovation, competition, and productivity. McKinsey Global Institute. Retrieved from
http://www.mckinsey.com/Insights/MGI/Research/Technology_and_Innovation/Big_data_The_next_frontier_for_innovation

[2] Thibodeau, P. (2012, October 22). Big data to create 1.9M IT jobs in U.S. by 2015, says Gartner. *Computerworld.com.* Retrieved February 24, 2013, from
http://www.computerworld.com/s/article/9232721/Big_data_to_create_1.9M_IT_jobs_in_U.S._by_2015_says_Gartner

In a poll of current and former students of the College of IS&T, 78% of the 81 respondents said that they agreed or strongly agreed with the statement "I would be interested in pursuing this graduate certificate in data analytics." An overwhelming 97% said that they agreed or strongly agreed with the statement "I think UNO should offer this graduate certificate in data analytics." The College of IS&T's Advisory Board, consisting of representatives of many Omaha companies, strongly supports efforts to develop curricular offerings in analytics.

Frequently Asked Questions

1.   For whom are the graduate certificates intended?

(a) Part-time and full-time University of Nebraska students seeking graduate degrees and (b) business and information technology professionals seeking to expand their knowledge and skills in the area of data analytics.

2.   What are the benefits of earning a graduate certificate?

The graduate certificate program would offer existing technical and managerial professionals opportunities for professional development in the area of data analytics. Those pursuing the graduate certificate will enhance skill sets in data analytics; gain exposure to new information technologies, theories and practices; increase growth potential with employers; and increase prospects of obtaining a graduate degree.

3.   Will the course work completed towards the graduate certificate apply towards the MS in MIS?

The short answer is yes; all graduate level course work i.e., 8xxx courses may be applied towards a master of science degree in MIS (MS MIS). However, students have to apply for admission to the MS MIS program and be admitted. (Please refer to our web site http://www.isqa.unomaha.edu/ for further information regarding the admission process).

4.   What is the cost of taking courses for the graduate certificate?

For the 2012-13 academic year, non-resident tuition is $645.75 and resident tuition $245.25 per credit hour respectively. Please visit http://cashiering.unomaha.edu/ to check for the latest tuition and fees.

5.   Who issues the graduate certificates?

The graduate certificates are issued under the authority of the University of Nebraska Graduate College.