

Contact: Rachel Boon

**REQUEST FOR NEW PROGRAM AT THE IOWA STATE UNIVERSITY:
BACHELOR OF SCIENCE IN BUSINESS ANALYTICS**

Action Requested: Consider approval of the request by Iowa State University for a Bachelor of Science in Business Analytics from the Ivy College of Business.

The Council of Provosts and Board office support approval of this program.

Background:

Description of proposed program. Undergraduate students wishing to focus on business analytics can currently do so by taking two elective courses in the Management Information Systems (MIS) major. These courses are MIS 436 Introduction to Business Analytics and MIS 446 Advanced Business Analytics. There is great demand for entry-level employees that have deeper and broader skills in this area, but are still business majors. The proposed major in business analytics aims to meet this demand.

The proposed major in business analytics will provide deeper and broader training for students interested in applying analytical techniques to various business applications. According to a recent McKinsey & Company report, "The biggest barriers companies face in extracting value from data and analytics are organizational; many struggle to incorporate data-driven insights into day-to-day business processes¹." PWC states that there will be two different markets for data science and analytics jobs: analytics-enabled jobs and data science jobs.² The business analytics major is designed to produce business students for analytics-enabled jobs. This complements the data science major, which is designed to produce graduates for data science jobs. While there is overlap between the disciplines, a useful distinction is that Business Analytics is about locating and distilling useful information from structured and unstructured data to explain historical, current, and future business performance; determining the most appropriate analytical models and techniques to present and explain solutions to users. Data Science, on the other hand, is about the design, development, and deployment of algorithms through various programming techniques supporting decision tools; managing massive amounts of data and creating visualizations and other tools to aid in interpretation and understanding.³

Students majoring in business analytics will be students of the Ivy College of Business. The admission requirements to the College and to its professional program for students wishing to major in business analytics will be the same as for all other majors. The curriculum will require 31 credits of general education coursework, 22 credits of foundation coursework, 16 credits of supporting courses, 24 credits of core coursework, and 21 credits of major coursework (122 total credits). The general education, foundation, supporting, and core coursework is similar to that for other majors in the Ivy College of Business. This curriculum can be completed in eight semesters (four years).

Academic objectives. The academic objectives of the program are twofold. First, students will acquire the knowledge base and skills in business, technology, and data analysis to enter the workforce as business analytics professionals. Second, students will acquire the business-related skills that are needed to be successful on the job when they become business analytics professionals. These include the ability to: understand how a business is organized and functions, communicate effectively in written, oral, visual, and electronic modes, work in teams, make ethical

choices, use quantitative and analytical methods to address unstructured business problems, think critically, understand financial statements, and understand markets and investments.

Need for proposed program. The need for a program came into focus after the success of the Master of Business Analytics degree program. It became apparent that some undergraduates had the same interest in the tools and techniques used in business analytics processes, and could contribute positively to their employers in this regard. Many of the classes taught in the Master of Business Analytics program were initially designed at the undergraduate level, and are still being continuously updated and taught at both levels.

Currently, there is a two-course “track” in the MIS major for Business Analytics. The two courses, MIS 436 and MIS 446, currently require the database course, MIS 320, as the only pre-requisite. The pre-requisite will be strengthened to also include STAT 326 for both MIS 436 and MIS 446. The MIS major only requires STAT 226 or an equivalent course. In an analysis of what the impact would be by making this pre-requisite change, the college determined there are a fair number of MIS majors who either started out at DMACC or another college on campus and have done a course substitution for STAT 226. In order to meet the requirements of the Statistics department, those students would have to go back and take STAT 226 and then STAT 326 for the Business Analytics major. This means for students who start in a different program or institution, it will often require taking two more statistics courses, just to take two of the required courses for the Business Analytics major. We have communicated this to the Statistics department and they have provided a letter of support for the proposed major.

By adding the STAT 326 pre-requisite to MIS 436 and MIS 446, the course instructors are going to be able to move through some of the material at a quicker rate, moving into deeper and more sophisticated applications. This change will be attractive to Finance and Accounting majors, who already are required to take STAT 326 for their majors, and the college anticipates a large number of double majors from these two majors. Double and triple majors are already very common in the Ivy College. Also, the set of electives for the proposed major brings together a set of electives that previously would not be taken together, as they are part of five other distinct majors in the College. The Dean’s Advisory Committee and recruiters are very excited about this particular grouping of courses, and believe it will complement the existing skill sets of students coming out of the Ivy College.

The Information Systems faculty polled recruiters to gauge employer interest in such a degree program. The results were overwhelmingly in favor of an undergraduate degree program in business analytics. As it became more apparent that such a degree program should cross functional areas, an undergraduate business analytics task force was formed with representatives from each of the departments in the Ivy College of Business.

Link to institutional strategic plan. The Ivy College of Business offers high-quality undergraduate, masters, and doctoral level programs, and has a number of nationally recognized research scholars and a strong research reputation in selected fields, including analytics. The addition of this bachelor’s level business analytics program would make a significant contribution to the College’s strategic goals. In fact, one of the items under Goal 1 of the Ivy College of Business’ 2015-2020 strategic plan calls for “the establishment of new undergraduate majors, minors, and certificates based on industry needs.”

Relationship to existing programs at the institution. The foundation, supporting and core business classes required for the business analytics major are already being taught in the Ivy College of Business. The statistics course required is currently being taught, as other Ivy College of Business

majors (Accounting, Actuarial Science and Finance) also take this course. The DS 201 Introduction to Data Science, is also already taught for students in the Data Science major. Most of the electives are also already being taught and are used as electives for the other majors in the Ivy College of Business, particularly in Accounting, Finance, Marketing, Management, Management Information Systems (MIS) and Supply Chain Management (SCM).

The Business Analytics major will complement existing majors in both the Ivy College of Business and Iowa State University. The Business Analytics major will complement the Data Science major, as offering students a curriculum that is much more applied than the Data Science major. Students seeking a much more theoretical degree with applications in Engineering, Science and Medicine will pursue the Data Science major.

Relationship to existing programs at other colleges and universities. The University of Iowa offers a bachelor degree in information systems and business analytics. Students can choose to take either the information systems track or the business analytics track. This proposed degree differs in that it is built around the functional areas of business, rather than just a different set of information systems electives. The University of Northern Iowa does not have a similar degree program. Drake University does offer a bachelor of science in business administration with a major in data analytics. While the core is similar, the set of electives is not. Also, Drake University is a private university with high tuition (currently \$19,458 per semester for students entering in the 2017-18 academic year), making it unaffordable for many students.

Unique features. Iowa State University is the perfect home for the proposed Bachelor of Science in Business Analytics. ISU is close to Des Moines, which has a strong technology and services sector. This creates a ready and easily accessible market for students. The close proximity of this market makes it easy to maintain contact with the companies hiring ISU students and to stay up-to-date on current changes in the industry which might affect the program. As already mentioned, the program would draw on the existing strengths of the Ivy College of Business.

Resources to establish a high-quality program. The Ivy College of Business has all of the necessary faculty and required expertise to provide an excellent program. The program fits in well with the Ivy College of Business' educational mission and with that of Iowa State University.

All of the required courses for the business analytics major already exist at Iowa State University and are being taught by highly qualified faculty in the Ivy College of Business and the Departments of Computer Science. The Ivy College of Business has extensive experience in Business Analytics programs, with a Master of Business Analytics program and a graduate certificate in Business Analytics in place.

As business analytics is a growing and developing field, the set of electives is expected to also grow and evolve. Given the current track in business analytics in the MIS major, and a demand for analytics-based coursework in other majors, a full slate of electives are already available and have been taught multiple semesters. One new course in Human Talent Analytics is currently under development. This course will be an elective in multiple programs.

The Ivy College of Business is housed in the thirteen year old Gerdin Business Building. The Gerdin Business Building has state-of-the-art research and instructional technology. Other than faculty and classroom space, the main resources needed to teach the program are computer hardware and software. These resources are already available in the Gerdin Business Building.

Student demand. As mentioned above, all of the courses required for the business analytics major are already offered for other programs. There is the ability to expand capacity in required courses as needed.

Workforce need/demand. IBM estimates that employment demand for data science and analytics jobs will reach nearly 700,000 openings by 2020. 59% of this demand will come from Finance and Insurance, Professional Services and IT. The Des Moines market is well-represented in all of these sectors. The report also states that by 2020, jobs requiring significant expertise with data will increase by 364,000 openings to 2,720,0005.

The Ivy College of Business Career Services office has a strong tradition of working with undergraduate students in the various majors, and as a result report strong internship and placement rates. This is across majors, including MIS, Supply Chain Management, and Accounting, which are considered more technical and rigorous majors. The college also conducted a brief employer survey to verify need and to inform the curriculum.

Cost. No new costs are necessary to run the program over the next seven years. Printed information for all undergraduate majors is updated each year, so there will be no miscellaneous expenses associated with the major. We do not anticipate the need to expand recruiting, advising or career coordinator staffing with the addition of the business analytics major.

Projected student enrollment.

	Y 1	Y 2	Y 3	Y 4	Y 5	Y 6	Y 7
Undergraduate	15	30	45	65	85	100	100

Accreditation. The Business Analytics major will be included as part of our business programs to be reviewed by The Association to Advance Collegiate Schools of Business (AACSB) at the next Continuous Improvement Review, which will take place during the 2019-2020 academic year. Once the major is well established, leadership will discuss with our industry partners and with members of the Ivy College of Business advisory councils whether the pursuit of additional accreditations would be worthwhile.

Evaluation plan. Student recruitment and enrollment will be monitored by the Associate Dean for Undergraduate Programs to ensure enrollment objectives are being met. Assessment of learning outcomes will be monitored to ensure students are meeting the desired learning objectives and for continual improvement of the program. Student internships and student placement will be monitored to evaluate the success of the program with respect to job placement.

Date of implementation. January 2020

Appendix A

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

College of Liberal Arts and Sciences
Department of Computer Science
226 Atanasoff Hall
tel: 515 294 4377
fax: 515 294 0258
url: www.cs.iastate.edu

November 30, 2018

To: Jackie Rees Ulmer, Ph.D.
Associate Dean for Undergraduate Programs
Union Pacific Professor of Information Systems
Ivy College of Business
Iowa State University

Dear Dr. Ulmer,

With this letter I want to express my support for the proposals for a Major and a Minor in Business Analytics being put forward by the Ivy College of Business at Iowa State University.

The field of data science is exploding, and all indications are that the US industry will require an increasing number of data scientists with expertise ranging from the more theoretical algorithms and statistical knowledge to the more applied business, forecasting, and inference applications.

Iowa State University has recently created a Major, a Minor, and a Certificate in Data Science, administered by the College of Liberal Arts and Sciences, with a substantial core of computer science and statistics courses complemented by a range of application courses from other departments and colleges at Iowa State.

The Major and Minor being proposed by the Ivy College of Business at Iowa State University are substantially different from those in Data Science, because they are targeted exclusively to business students, thus they will be focused on, and motivated by, business applications. For this reason, I expect that potential competition for students choosing between Business Analytics and Data Science will be minimal; rather, students will have additional opportunities.

In conclusion, I believe that the new Business Analytics degrees will be a valuable complement to the current Data Science degrees, and that the State of Iowa will be better off by offering both.

Best regards,



Gianfranco Ciardo
Professor and Chair
Department of Computer Science
Iowa State University of Science and Technology
ciardo@iastate.edu

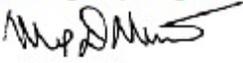
IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

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Ames, Iowa 50011-1210
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Interoffice Communication

DATE: October 24, 2018

TO: Jackie Rees Ulmer, Associate Dean for Undergraduate Programs, College of Business

FROM: Max D. Morris, Professor and Chair of Statistics 

SUBJECT: Proposed undergraduate major and minor in Business Analytics

This memo is to formally offer Department of Statistics support for the proposed CoB undergraduate major and minor programs in Business Analytics. As you note in your proposal, this should nicely complement the new LAS Data Science program, and so increase the variety of program options available to ISU students in this area.

The Statistics Department is delighted to support this effort.



Undergraduate Program Office

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Iowa City, Iowa 52242-1994
319-335-0037 Fax 319-335-3092
www.tippo.uiowa.edu/tipo

November 18, 2018

Board of Regents, State of Iowa
11260 Aurora Ave
Urbandale, IA 50322

Dear Members of Board of Regents,

I am writing to endorse the Iowa State University Ivy College of Business proposal to add a business analytics major. Here in the Tippie College of Business we already redesigned our Management Information Systems major to include a track in business analytics and a track in information systems. Since this change, we have had double-digit growth in these majors year-over-year for 3 years. We have also added a master's program in business analytics here on campus to complement our office-campus master's program in business analytics offered off-campus. Frankly, we are running as fast we can to keep up with demand.

Given the strength and growth of our programs, we do not believe that the introduction of a major at Iowa State will negatively influence our campus or our programs. In fact, I personally believe that adding a program in business analytics is in the best interests of the state as this type of high demand program should not be limited to one campus.

If you have questions, please do not hesitate to contact me directly via email (kenneth-g-brown@uiowa.edu) or phone (1-319-335-0924).

Sincerely,

Kenneth G. Brown, Ph.D.
Associate Dean, Undergraduate Program
Ralph L. Sheets Professor of Management



Office of the Dean

November 26, 2018

Dean David Spalding
Raisbeck Endowed Dean
Ivy College of Business
Iowa State University

Dear David,

Thank you for reaching out to us regarding your proposed undergraduate major in Business Analytics within the Ivy College of Business. We believe that this growing field will attract many students at all three Regent institutions, and we support the new program.

Sincerely,

A handwritten signature in blue ink that reads "Leslie K. Wilson".

Leslie K. Wilson
College of Business Administration
University of Northern Iowa



Office of the Dean • business.uni.edu • Ouris Business Building 325 • Cedar Falls, IA 50614-2123 • 515-273-6240

1 <https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/McKinsey%20Analytics/Our%20Insights/The%20age%20of%20analytics%20Competing%20in%20a%20data%20driven%20world/MGI-The-Age-of-Analytics-Full-report.ashx>

2 <https://www.pwc.com/us/en/library/data-science-and-analytics.html>

3 <https://www.kdnuggets.com/2015/10/infographic-data-scientist-business-analyst-difference.html>