

# KENT STATE UNIVERSITY CERTIFICATION OF CURRICULUM PROPOSAL

Preparation Date **22-Feb-19** Curriculum Bulletin \_\_\_\_\_  
 Effective Date **Fall 2019** Approved by EPC \_\_\_\_\_  
2020

Department **Management & Information Systems**  
 College **BU - Business Administration**  
 Degree **CER6 - Post-Baccalaureate Certificate**  
 Program Name **Business Analytics ~~Certificate~~** Program Banner Code **CL646**  
 Concentration(s) \_\_\_\_\_ Concentration(s) Banner Code(s) \_\_\_\_\_  
 Proposal **select one Establish**

Description of proposal:

**The Business Analytics Certificate Program provides individuals, especially those without analytics job titles or responsibilities but with the burning desire for the field, the opportunity to familiarize themselves with this ever-growing and versatile discipline. The certificate program would also enable these individuals to augment their knowledge base beyond their chosen professions and improve their value to their employers and businesses, or marketability if they choose to change jobs.**

Does proposed revision change program's total credit hours?  Yes  No  
 Current total credit hours: **12** Proposed total credit hours **12**

Describe impact on other programs, policies or procedures (e.g., duplication issues; enrollment and staffing considerations; need; audience; prerequisites; teacher education licensure):

**Courses in the proposed BA Certificate Program is selected from existing Master of Science in Business Analytics (MSBA) program that has been offered for three years at Kent State University. So, no appreciable impact on other programs, policies or procedures is anticipated. Any impact regarding ability of the college to staff the program should enrollment increase beyond the current capacity will be evaluated as necessary.**

Units consulted (other departments, programs or campuses affected by this proposal):

**M&IS FAC and College of Business Administration Graduate Program Committee.**

REQUIRED ENDORSEMENTS	
	4,02,19
Department Chair / School Director	
	12,18,19
Campus Dean (for Regional Campuses proposals)	
	1,10,20
College Dean (or designee)	
	1,10,20
Dean of Graduate Studies (for graduate proposals)	
	1,10,20
Senior Vice President for Academic Affairs and Provost (or designee)	




Interdepartmental Correspondence

*Department of Management & Information Systems*

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**TO:** Dr. Cathy DuBois, *Associate Dean*, College of Business

**FROM:** O. Felix Offodile, *Chair*, M&IS Department 

**DATE:** April 2, 2019

**SUBJECT:** Proposal to establish a Graduate Business Analytics Certificate Program

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Attached is a proposal to establish a Business Analytics Certificate Program. The purpose of the Certificate Program is to provide individuals, especially those without analytics job titles or responsibilities but with the burning desire for the field, the opportunity to familiarize themselves with this ever-growing and versatile discipline. The certificate program would also enable these individuals to augment their knowledge base beyond their chosen professions and improve their value to their employers and businesses, or marketability if they choose to change jobs.

The proposal has been approved by the M&IS Faculty Advisory Committee (FAC).

## Notice of Intent to Offer an Educational Program [Business Analytics Certificate] Kent State University

Gainful Employment Electronic Announcement #5 dated 1 June 2011 and posted on [www.ifap.ed.gov](http://www.ifap.ed.gov) explains the process for institutional notification to the U.S. Department of Education (ED) of new educational programs that prepare students for gainful employment in a recognized occupation (GE Programs). An institution's notification to ED of its intent to offer a new GE Program must include information to support the institution's determination of the need for the program, as required by the regulations at 34 CFR 600.20(d)(2). Descriptions and documentation provided by an institution can cover more than one new GE Program, if the same, or similar, process was used by the institution to determine the need for the program, and should be provided as follows:

1. Institution Name: **Kent State University**
2. OPEID: **00305100**
3. Program name(s) and program CIP code(s) supported by this documentation: *(Therese Tillett will provide CIP code once document has been submitted to Curriculum Services.)*

### **Certificate in Business Analytics**

4. Narrative description of how the institution determined the need for the program. For example, describe what need this program will address and how the institution became aware of that need. If the program is replacing a current program(s), identify the current program(s) that is being replaced by the new program(s) and provide details describing the benefits of the new program(s). If the program will be offered in connection with, or in response to, an initiative by a governmental entity, provide details of that initiative. The institution must retain documents that support this description for review or submission to the ED upon request.

**Business Analytics is the science of turning data into meaningful information a business could use for its competitive advantage. Demand for business analytics expertise transcends all areas of business including banking, healthcare, retail markets, manufacturing, finance and the public sector. As a diverse field that caters to the needs of equally diverse industries, business analytics programs are amalgamation of curricula from business, engineering, mathematics, information systems, statistics, and other cognate disciplines. Such programs fall under the STEM (science, technology, engineering and mathematics) designation.**

**Recent research, including by the McKinsey Global Institute.<sup>1</sup> and Accenture Institute for High Performance projects<sup>2</sup>, show that there is acute need for business analytics professionals. Further, according to the US Bureau of Labor Statistics 2012-2022 report<sup>3</sup>, the expected job growths in select areas of business analytics is strong as Table 1 shows. Plus, a comparison of 2014 and 2019 analytics related job listings in select**

<sup>1</sup> Manyika, J., Chui, M., Brown, B., Bughin, J., Dobbs, R., Roxburgh, C., & Byers, A. H. (2011). "Big data: The next frontier for innovation, competition, and productivity." McKinsey Global Institute.

<sup>2</sup> Elizabeth Craig, David Smith, Narendra P. Mulani and Robert J. Thomas, "Where will you find your analytics talent?" Outlook, October 2012.

<sup>3</sup> Bureau of Labor Statistics, "Occupational Employment Projections to 2026." January 2018. <https://data.bls.gov/search/query/results?ex=013738036195919377644%3A6ih0hfrgl50&q=analyst>. Retrieved February 20, 2019.

Ohio metropolitan areas from Indeed.com<sup>4</sup> show growths increasing between 143% and 580% (Table 2) for key analytics related disciplines. Finally, results of our industry survey indicated that the cumulative increase in the number of analytics employees within their organizations will be 97.4% over the next three years. In the intermediate to long-term time horizons 48% predict that employment opportunities will “increase dramatically”, 48% predict it will “increase moderately”, and 4% predict it will remain the same, while 0% believe the employment opportunities will contract. The results in Table 2 also corroborate these predictions.

**Table 1: 2016-2026 Job Outlook for Analytics related Occupations**

Occupation	No. of Jobs, 2016	Employment Change 2016-2026	Job Outlook 2016-2026	Median Pay/year
Mathematicians/ Statisticians	40,300	13,500	33%: Much faster than average	\$84,760
Financial Analysts	296,100	32,200	11%: Faster than average	\$84,300
Budget Analysts	58,400	3,800	7%: Slower than Average	\$75,240
Market Research Analysts	595,400	138,300	32% Much faster than average	\$60,300
Operations Research Analysts	114,000	31,300	27%: Much faster than average	\$81,390
Computer Systems Analysts	600,500	54,400	9%: Much faster than average	\$88,270
Information Security Analysts	100,000	28,500	28%: Much faster than average	\$95,510

**Table 2: Job Postings in Select Ohio Metropolitan Areas by Search Term**

	analytics		big data		statistics		data analysis	
	2014	2019	2104	2019	2014	2019	2014	2019
Akron/ Cleveland	442	1273	63	363	470	617	266	1964
Cincinnati	416	1293	60	404	263	576	182	1551
Columbus	602	992	34	416	372	491	290	1506
<b>Totals</b>	<b>1460</b>	<b>3558</b>	<b>157</b>	<b>1183</b>	<b>1105</b>	<b>1684</b>	<b>738</b>	<b>5021</b>
<b>% Change</b>	<b>143.70%</b>		<b>653.50%</b>		<b>52.40%</b>		<b>580.35%</b>	

The purpose of the Certificate Program is to provide individuals, especially those without analytics job titles or responsibilities but with the burning desire for the field, the opportunity to familiarize themselves with this ever-growing and versatile discipline. The certificate program would also enable these individuals to augment their knowledge base beyond their chosen professions and improve their value to their employers and businesses, or marketability if they choose to change jobs.

<sup>4</sup> <http://www.indeed.com/jobs?q=analytics>. Retrieved February 2019.

5. Narrative description of how the program was designed to meet local market needs, or for an online program, regional or national market needs. For example, indicate if Bureau of Labor Statistics data or state labor data systems information was used, and/or if state, regional, or local workforce agencies were consulted. Include how the course content, program length, academic level, admission requirements, and prerequisites were decided; including information received from potential employers about course content; and information regarding the target students and employers. The institution must retain copies of documents and its analysis for review and submission to the ED upon request.

**The premise of the analytics curriculum from which the certificate program is derived is to provide graduates a firm grasp of important analytical techniques and the knowledge of how to best implement, interpret, and communicate them in a variety of business contexts. Pursuant to this goal, the curriculum was designed as a “Three-Foci Model” that integrates data analysis, information and data management, and decision-making and leadership. This model can be summarized as encompassing analytics technologies, techniques, and decision-making processes.**

**Several analytics programs at other institutions including InformationWeek’s list of the top 20 analytics programs<sup>5</sup>), knowledge from academic and professional conferences, and “analytical body of knowledge” from the Institute for Operations Research and the Management Sciences (INFORMS)<sup>6</sup> were benchmarked in developing the three-foci-model. Further, the BLS data reported earlier in Section 4, our review of employment trends in cognate analytics occupations, and survey of northeast Ohio industries, where majority of the respondents agreed that the distribution of knowledge in the curriculum is appropriate, bolstered the curriculum design.**

**As discussed earlier in Section 1 and represented in Table 1, data from the US Bureau of Labor Statistics indicate that the national job growth in analytics representative disciplines will be robust, at least through 2022. This projection is also supported at the state level by the more than 143% to 580% growth in analytics job listings from 2014 to 2019 as shown in Table 2. Plus, a 2013/14 Jobs Ohio<sup>7</sup> report that “data-driven marketing now accounts for about 3.3 percent of Ohio’s gross domestic product...an industry that employs more than 20,000 Ohioans” buttresses the need for the proposed MSBA program.**

**The courses that comprise the certificate program were selected from those in the full-time analytics degree program. They are, therefore, consistent with the input received from our stakeholders, the same in content and rigor, and taught by the same faculty core that deliver the full-time program. Clearly, because the certificate program is a subset of the full-time MSBA program, the twelve (12) credits hours is 40% of the 30 hours for the full-time program. However, the courses were selected to provide students in the Certificate program with as much knowledge as is possible within the limits of the credit hour requirements. Given the likelihood that students in the Certificate**

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<sup>5</sup> Henschen, D. “Big Data Analytics Master's Degrees: 20 Top Programs.” *InformationWeek*. January 7, 2013. <http://www.informationweek.com/big-data/big-data-analytics/big-data-analytics-masters-degrees-20-top-programs/d/d-id/1108042>. Retrieved July 22, 2014.

<sup>6</sup> INFORMS. “About INFORMS.” <https://www.informs.org/About-INFORMS>. Retrieved January 24, 2015.

<sup>7</sup> Jobs Ohio, “2013/2014 annual report/strategic plan.” [http://jobs-ohio.com/images/JO\\_annual\\_report\\_2013\\_14.pdf](http://jobs-ohio.com/images/JO_annual_report_2013_14.pdf). Retrieved January 31, 2015.

**program are working professionals, and in the program part-time, the expected duration to complete the Certificate Program is 12 to 18 months. Finally, the admission requirements for the Certificate Program is the same as those for our regular Master of Business Administration (MBA) program for working professionals. Students for the certificate program are required to have completed their baccalaureate degree from an accredited college or university with a minimum 3.00 GPA on a 4.00 point scale. Further, applicants must submit official transcripts, scores on the GRE/GMAT and for international applicants English Language Proficiency, resume, goal statement, and two-to-three letters of recommendation. The GRE/GMAT may be waived for KSU students and applicants with 3 or more years of work experience in analytics related disciplines. Applicants may transfer credits towards the MSBA or a cognate degree program if admitted into that program.**

6. Narrative description of any wage analysis the institution may have performed, including any consideration of Bureau of Labor Statistics wage data related to the new program. The institution must retain copies of analysis documents for review and submission to the ED upon request.

**Several universities including the University of Cincinnati<sup>8</sup> and North Carolina State University have reported over a 93% placement of their MSBA graduates, with some graduates receiving multiple offers and starting salaries often in the high five figure ranges<sup>9</sup>. Further, our own internal data shows that more than 90% of graduates from the Kent State University Master of Science in Business Analytics program have Positive Career Outcome (employed or pursuing advanced degrees).**

**In the past several years the general job outlook for various majors has been sporadic at best. However, job prospects for majors that are founded on educational fundamentals of STEM have been reasonably stable, with growth in areas such as analytics. Richie Bernardo reports that the Department of Commerce estimates that STEM “professionals will expand 1.7 times faster than non-STEM occupations between 2008 and 2018” with most lucrative careers in the country that are less susceptible to unemployment and salaries that are “71 percent more than the national” average.<sup>10</sup>**

7. Narrative description of how the program was reviewed or approved by, or developed in conjunction with, one or more of the following: business advisory committees; program integrity boards; business that would likely employ graduates of the program; and/or public or private oversight or regulatory agencies (not including the state licensing/authorization agency and accrediting agency).

For example, describe the steps taken to develop the program, identify when and with whom discussions were held, provide relevant details of any proposals or correspondence generated, and/or describe any process used to evaluate the program. The institution must retain, for

<sup>8</sup> University of Cincinnati, Linder College of Business, “MS-Business Analytics Program.” <http://business.uc.edu/graduate/ms-business-analytics.html>, Retrieved Nov 11, 2014.

<sup>9</sup> Thibodeau, P., “Career alert: A Master of analytics degree is the ticket -- if you can get into class.” *Computerworld*. Apr. 24, 2014. <http://www.computerworld.com/article/2488544/it-careers/career-alert--a-master-of-analytics-degree-is-the-ticket---if-you-can-get-into-class.html>. Retrieved January 20, 2015.

<sup>10</sup> Bernardo, Richie, “2015’s Best and Worst Metro Areas for STEM Professionals.” <http://wallethub.com/edu/best-worst-metro-areas-for-stem-professionals/9200/>. Retrieved January 25, 2015.

review and submission to the ED upon request, copies of meeting minutes, correspondence, proposals, or other documentation to support the development, review, and/or approval of the program.

**Kent State University has a rigorous policy for the establishment and approval of courses and programs. The policy gives departments the discretion to propose courses and programs they believe would advance their students' learning experiences that would enable them to become productive citizens and contribute to their communities, the state and the wider global community. Such courses and programs are first approved by the Department's Faculty Advisory Committee (FAC), then the College's Curriculum Committee (CCC), and progressively by the Graduate Dean (for graduate courses and programs) or Curriculum Services (for undergraduate courses and programs), the Provost, Educational Policies Council (EPC), Faculty Senate, the President, and the Board of Trustees. Proposals that meet certain requirements may be transmitted to the Ohio Department of Higher Education (ODHE) for final approval.**

**Before the MSBA proposal was developed at the department level several constituencies such as students, members of the board of our Center for Information Systems (CIS), and faculty were consulted for their input and expertise. We also conducted a survey of northeast Ohio industries whose employees are likely to benefit from the Certificate Program for their professional input regarding the program's curriculum. As discussed earlier in Section 5, several university curricula and professional organizations were also consulted. Further, several iterations of the initial draft of the proposal were discussed both at the department and college levels before advancement to the university level for approvals. Several internal and external reviewers provided letters in support of the proposal. Once the proposal made it to the state level, several institutions of higher learning including the University of Cincinnati, The Ohio State University, Bowling Green State University, and the University of Akron provided further input that were used to strengthen the curriculum of the original MSBA program from which the Business Analytics Certificate Program is derived.**

8. Date of the first day of class. Include both:
- a. The first day the program was or will be offered by the institution, and

**Kent State University already offers a Master of Science degree in Business Analytics. This program was first offered in fall 2016.**

**The Certificate program is scheduled to be offered starting Fall 2019.**

- b. The day you would like to begin disbursing Title IV funds to students enrolled in the program.

**XXXXXX**

# Business Analytics Certificate

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- [Special Education](#)
- [Graduate Programs](#)
- [Graduate Certificates](#)
- Business Analytics Certificate

## Program Description

The Business Analytics Certificate Program provides individuals, especially those without analytics job titles or responsibilities but with the burning desire for the field, the opportunity to familiarize themselves with this ever-growing and versatile discipline. The certificate program would also enable these individuals to augment their knowledge base beyond their chosen professions and improve their value to their employers and businesses, or marketability if they choose to change jobs.

## Program Learning Outcomes

The Business Analytics certificate provides skills and competencies specific to:

- developing proficiency in the framing of business and analytics problems,
- providing leadership and decision-making abilities using analytics tools in different business contexts throughout the model lifecycle,
- developing competencies in identifying data needs and sources, data acquisition and the cleaning and refining of data for analytical processing,
- developing competencies in analytical model selection, software selection and model building,
- developing competencies in deploying, validating and interpreting analytical solutions.

The GRE/GMAT may be waived for recent (within five years) KSU baccalaureate graduates with a minimum 3.500 overall GPA, and applicants with 3 or more years of relevant work experience. Applicants may transfer credits towards the MSBA or a cognate degree program if admitted into that program.

The premise of the certificate program is to provide graduates a firm grasp of important analytical techniques and the knowledge of how to best implement, interpret, and communicate them in a variety of business contexts. This goal is pursued using a “Three-Foci Model” design that integrates data analysis, information and data management, and decision-making and leadership. This model can be summarized as encompassing analytics technologies, techniques, and decision-making processes.



## Accreditation

AACSB, International - The Association to Advance Collegiate Schools of Business

## Admission Requirements

- Bachelor's degree from an accredited college or university for unconditional admission
- Minimum 3.000 undergraduate GPA on a 4.000 point scale for unconditional admission
- Official transcript(s)
- GMAT or GRE scores
- Goal statement
- Resume
- Two-to-Three letters of recommendation
- English language proficiency - all international students must provide proof of English language proficiency (unless they meet specific exceptions) by earning one of the following:
  - Minimum 550 TOEFL PBT score (paper-based version)
  - Minimum 79 TOEFL IBT score (Internet-based version)
  - Minimum 77 MELAB score
  - Minimum 6.5 IELTS score
  - Minimum 58 PTE score

For more information about graduate admissions, please visit the [Graduate Studies admission website](#). For more information on international admission, visit the [Office of Global Education's admission website](#).

## Certificate Courses

Required Courses (6 Hours)		
MIS 64018	Quantitative Management Modeling	3
MIS 64036	Business Analytics	3
MIS 64060	Fundamentals of Machine Learning	3
MIS 64082	Database Management & Database Analytics	3
<b>Total Credits Hours</b>		<b>12</b>

V1/TR  
V1/TR  
V1/TR