FAU
BOARD OF TRUSTEES
Florida Atlantic University

Item: AS: A-3

COMMITTEE ON ACADEMIC AND STUDENT AFFAIRS

Tuesday, June 8, 2021

SUBJECT: REQUEST FOR APPROVAL OF A NEW DEGREE PROGRAM - CIP 30.7102

PROPOSED BOARD ACTION

Request for approval of the following New Degree Program – CIP 30.7102

- M.S. in Business Analytics

BACKGROUND INFORMATION

The Information Technology & Operations Management (ITOM) department in the College of Business is proposing a new degree in Master of Science in Business Analytics (MSBA). It is a STEM program with emphasis on Artificial Intelligence that provides a strong curriculum that teaches business graduate students methods and tools to extract, curate, preserve, analyze, mine, visualize, and present structured and unstructured business data, to help make well-informed managerial and executive decisions in various domain-specific business contexts. Business Analytics is a key element of the financial, healthcare, cybersecurity, social media, marketing, trade, transport, retail, manufacturing, hospitality, sports management, and service industries. These are key elements of the South Florida economy. The program provides graduates with the key skills and hands-on experience demanded by employers locally, statewide, nationally, and internationally.

IMPLEMENTATION PLAN/DATE

Effective Fall 2021, pending approval by the Florida Atlantic University Board of Trustees.

FISCAL IMPLICATIONS

The proposed program will operate as a regular E&G funded program. The courses that will be part of the new degree program are all currently taught, existing courses. The faculty salary and benefits needed to support this program will come entirely from reallocated base E&G funds.

Supporting Documentation: New Degree Proposal Form
Presented by: Dr. Bret Danilowicz, Vice President for Academic Affairs & Provost
Phone: 561-297-6350

Board of Governors, State University System of Florida

Request to Offer a New Degree Program
(Please do not revise this proposal format without prior approval from Board staff)

Florida Atlantic University	Fall 2021
University Submitting Proposal	**Proposed Implementation Term**
College of Business	Information Technology and Operations Management (ITOM)
Name of College(s) or School(s)	**Name of Department(s)/ Division(s)**
Business Analytics	Master of Science in Business Analytics (MSBA)
Academic Specialty or Field	**Complete Name of Degree**
30.7102	
Proposed CIP Code	

The submission of this proposal constitutes a commitment by the university that, if the proposal is approved, the necessary financial resources and the criteria for establishing new programs have been met prior to the initiation of the program.

Date Approved by the University Board of Trustees		**President**		**Date**
Signature of Chair, Board of Trustees	**Date**	**Vice President for Academic Affairs**		**Date**

Provide headcount (HC) and full-time equivalent (FTE) student estimates of majors for Years 1 through 5. HC and FTE estimates should be identical to those in Table 1 in Appendix A. Indicate the program costs for the first and the fifth years of implementation as shown in the appropriate columns in Table 2 in Appendix A. Calculate an Educational and General (E&G) cost per FTE for Years 1 and 5 (Total E&G divided by FTE).

Implementation Timeframe	Projected Enrollment (From Table 1)		Projected Program Costs (From Table 2)				
	HC	FTE	E&G Cost per FTE	E&G Funds	Contract & Grants Funds	Auxiliary Funds	Total Cost
Year 1	20	18	$6,150	$110,704	0	0	$110,704
Year 2	30	26					
Year 3	40	34					
Year 4	50	43					
Year 5	60	51	$2,980	$151,993	0	0	$151,993

Note: This outline and the questions pertaining to each section must be reproduced within the body of the proposal to ensure that all sections have been satisfactorily addressed. Tables 1 through 4 are to be included as Appendix A and not reproduced within the body of the proposals because this often causes errors in the automatic calculations.

INTRODUCTION

Key Acronyms:
- MSBA (Master of Science in Business Analytics)
- ITOM (Information Technology and Operations Management)

I. Program Description and Relationship to System-Level Goals

A. Briefly describe within a few paragraphs the degree program under consideration, including (a) level; (b) emphases, including majors, concentrations, tracks, or specializations; (c) total number of credit hours; and (d) overall purpose, including examples of employment or education opportunities that may be available to program graduates.

a. ITOM is proposing a new graduate Master of Science in Business Analytics (MSBA) program. The program will be administered by the Department of Information Technology and Operations Management (ITOM) in the College of Business (COB), Florida Atlantic University (FAU).

b. The program will train business graduate students in methods and tools to extract, curate, preserve, analyze, mine, visualize, and present structured and unstructured business data, in order to make well-informed executive decisions in various domain-specific business contexts. The emphasis of the program is Artificial Intelligence, Social Media Analytics, as well as more advanced domain-specific topics, such as Healthcare Analytics, Sports Analytics, Financial Analytics, and Hospitality and Marketing Analytics, which are important for the local Economy. There are no concentrations, tracks, or specializations.

c. The program requires a minimum of 30 credits and does not offer a thesis option.

d. The program will provide graduates with business analytics skills and hands-on experiences that meet the market demand locally, in South Florida, and internationally. The STEM emphasis, coupled with FAU's location, means that it can take advantage of the large trade volumes to and from Latin America by providing an international/global focus to the program. As a STEM designated program, it allows enrolled graduates on student visas to extend their work stay in the United States up to two years longer, which provides an additional opportunity to recruit students.

Business Analytics is a key element of the financial, healthcare, cybersecurity, social media, marketing, trade, transport, retail, manufacturing, hospitality, sports management, and service industries. These are also key elements of the South Florida economy. The globalization and the advancements in digital technologies, with the most recent emphasis on Artificial Intelligence, have resulted in an increased focus on Business Analytics and its potentials for competitive advantage and business growth. Business Analytics is expanding in scope. There is an increasing demand for Business Analytics professionals locally and nationwide. The graduates of the MSBA program will fill needs in the local, state, and national level. Employment opportunities for the graduates include the job titles such as Management Analyst, Operations Research Analyst, Financial Analyst, Senior Business Analytics Manager, Assistant Director of Business Analytics, Artificial Intelligence Senior Manager, Chief Information Officer, Business Analyst, and others.

B. Please provide the date when the pre-proposal was presented to CAVP (Council of Academic Vice Presidents) Academic Program Coordination review group. Identify any

concerns that the CAVP review group raised with the pre-proposed program and provide a brief narrative explaining how each of these concerns has been or is being addressed.

The pre-proposal for the MS in Business Analytics (with CIP=52.1301) was presented to the CAVP Academic Coordinators Group and the Board of Governors staff on February 4, 2021. There was strong support among the SUS institutions for moving forward with the full proposal. No concerns were expressed at the meeting. The following comments were raised by the group for our consideration:

1) UCF presented a pre-proposal for an M.S. in Business Analytics at the same meeting. It was also approved and that will need to be addressed into the full proposal. Their proposed program will be housed in economics and have a strong economics focus.
2) Most on the committee felt that the CIP we wish to use (52.1301) is not the best fit. We are strongly encouraged to consider CIP 30.7102.

We address Comment 1 in the current proposal where we discuss the similar programs at the SUS, adding the UCF proposed program, specifically in Section II.C.

We thank very much the committee for their recommendation in Comment 2 about the better CIP. After careful consideration and examination of the new CIP and our curriculum, as well as the updated STEM list by the BOG, we agree with the committee's recommendation and adopt the CIP 30.7102 for the program.

C. If this is a doctoral level program please include the external consultant's report at the end of the proposal as Appendix D. Please provide a few highlights from the report and describe ways in which the report affected the approval process at the university.

We are proposing a degree in Business Analytics at Master's level. Therefore, this section does not apply to our proposal.

D. Describe how the proposed program is consistent with the current State University System (SUS) Strategic Planning Goals. Identify which specific goals the program will directly support and which goals the program will indirectly support (see link to the SUS Strategic Plan on the resource page for new program proposal).

The proposed M.S. in Business Analytics will directly support the SUS Strategic Planning Goals. The Strategic Plan 2012 - 2025 emphasizes teaching, research, and public service, with the following priorities: Excellence, Productivity, and Strategic Priorities for a Knowledge Economy.

Excellence

The proposed M.S. in Business Analytics is an academic program of the highest quality. World-class faculty and research experts will train the students in top skills needed to be competitive in the field of Business Analytics and area of emphasis of Artificial Intelligence. The high quality of the program is ensured by (1) a strong curriculum, delivering the foundations and principles of Business Analytics, Data Mining and Predictive Analytics, Artificial Intelligence, Social Media, integrated with major subfields such as Cybersecurity, Sports management, Marketing and Customer Service analytics, Forensics Accounting, Financial fraud analysis, etc.; (2) high quality applied industry projects supervised by experts in the field; and (3) Business Analytics and Artificial Intelligence software and simulation systems that will expose students to real world situations and problem solving, including

projects on IBM Watson and SAS Artificial Intelligence platforms.

Productivity
One of the main priorities of SUS Strategic Planning Goals is to award more degrees in the high demand programs in STEM disciplines. The proposed MSBA program aligns well with this priority. FAU will produce graduates which possess the skills and knowledge needed to be competitive in the Business Analytics field. This will be accomplished by developing strong Analytics and IT skills, critical for the effective Business Analytics in trade, social media, retail, government, and healthcare across the nation and the world. Bringing Artificial Intelligence into Business Analytics provides an unprecedented opportunity to develop a degree that meets the workforce demands of the future.

The proposed degree program will be delivered in mixed mode, in tried and implemented hybrid mode in Hy-Flex classrooms and labs which provide video recordings of the lectures, thus facilitating the access for students. It will also allow students to complete their degrees while maintaining full-time employment, with classes offered in ways that accommodate the schedules of working professionals. The degree is focused and linear, thus allowing students to be admitted and progress as a cohort and tracked for timely completion their degrees. All classes comprising the degree are currently taught and are offered every semester. The existing graduate classes with lower enrollments will see increase in enrollment due to the new program resulting in increased productivity and efficiency for the department, college, and the university.

Strategic priorities for a knowledge economy
One of the priorities of the BOG Strategic Plan is to increase the number of degrees in STEM and other areas of strategic emphasis. This proposed program supports FAU's Race to Excellence platform of Big Data Analytics which is listed as a top priority with a strong research component. Additionally, this program supports the state and university mission for advanced education in STEM disciplines while serving one of the most diverse student bodies in the SUS system. Business Analytics is included in the Florida SUS list of Programs of Strategic Emphasis (CIP 30.7102 Business Analytics) and is categorized as a STEM program. The proposed degree should add up to 40 new STEM graduate degrees awarded each year at FAU.

We believe that the STEM nature of the proposed program is recognized by the curriculum and the Artificial Intelligence emphasis, the technology driven coursework which teaches students to work with numerous tools and platforms, all widely used in the business world. With the CIP 30.7102, this program will add value to the BOG Strategic plan and goals.

Scholarship, Research and Innovation and Community and Business Engagement
Our faculty are world recognized researchers who publish in premier journals and are editors of top journals in the field. They are also engaged in community serving in industry associations, such CIO Association, Palm Beach Tech Association, Boca Raton Chamber of Commerce (IT committee), and others. The FAU College of Business has co-hosted, along with College of Science, the Data Science Symposium in May 2019 – a successful event that gathered scholars and local business for highly informative sessions and discussions. ITOM researchers have been awarded $1.5 million US-DHSS HRSA (Health Resources and Services Administration) Grant (2019-2022) on analyzing the data of Veteran RNs in Primary Care. In 2020-2021 they developed a Business Analytics model for analyzing and optimizing COVID-19 related investments to mitigate epidemic and pandemic risks and published their results in top journals, such as "Risk Analysis".

FAU Strategic Plan for Race to Excellence 2015 - 2025

The MS in Business Analytics program aligns with the vision of FAU which includes an excellent graduate education and high-quality programs in areas of strategic emphasis (STEM areas). The programs will support focal areas, known as Pillars and Platforms. Among the pillars, of particular relevance is Healthy Aging, since Business Analytics are critical for effective delivery of healthcare. Among the platforms, the Big Data Analytics is one of the major technologies driving the evolution of Business Analytics and Logistics. The MSBA program will also support platforms such as Community Engagement and Economic Development, as well as Global Perspectives and Participations, mainly through the research and teaching in Social Media Analytics.

FAU is also committed to develop Artificial Intelligence as the area of distinction in. Data Analytics and Business Analytics are an integral part of Artificial Intelligence. All 12 SUS universities, with exception of FAMU, have either a current Master's program in Business Analytics, or have just had an approved preproposal to develop such. FAU is among the latter. We believe that the proposed program will substantially enhance the FAU's prestige as the university of distinction in Artificial Intelligence.

College of Business (COB) strategic plan

The College of Business's vision is to aspire to be an internationally known and a nationally ranked business school. Its mission is to sustain an environment of entrepreneurial action and intellectual achievement through research and teaching, creating access to educational programs and opportunities for our constituents emphasizing the diverse people, industries, and issues of the south Florida region and beyond. By committing to action, we are guided by our strategic initiatives to attract and support faculty and students in scholarship and business engagement, while harnessing innovative means to sustain the College's mission.

Currently, COB offers two graduate STEM programs: Master of Science in Information Technology Management (MSITM), and Master of Science in Supply Chain Management (MSSCM). The addition of the MSBA which is high demand among business professionals and students, will increase the visibility and prestige of the college as the leader in providing most needed and highly relevant education.

E. If the program is to be included in a category within the Programs of Strategic Emphasis as described in the SUS Strategic Plan, please indicate the category and the justification for inclusion.

Per the Programs of Strategic Emphasis (PSE) methodology and program inclusion criteria at the resource page for new program proposal at the BOG website (https://www.flbog.edu/resources/academic/resources-new-program-proposals/, the **Programs of Strategic Emphasis Categories are:**

1. Critical Workforce - Education
2. Critical Workforce - Healthcare
3. Economic Development - Global Competitiveness
4. Economic Development - Science, Technology, Engineering, and Math (STEM)
5. Critical Workforce – Gap Analysis

Economic Development – STEM

We agree with the recommendation of the CAVP Academic Coordination Group that the

most appropriate CIP code for the proposed MSBA degree is 30.7102. The proposed M.S. in Business Analytics degree is identified in the Program of Strategic Emphasis list under the category of Economic Development – STEM. Our curriculum fits this CIP and the STEM designation in the best way: The program's curriculum is focused on developing strong quantitative and business analytics skills in students, along with elements of Artificial Intelligence, such as IBM Watson and SAS Artificial Intelligence Business Platform and tools. The program offers coursework, quantitative and IT training at the graduate level that will enable its graduates to enter Florida's workforce with the capabilities to fill the growing needs. Thus, the program supports the state and university mission for advanced education in STEM disciplines. The proposed MSBA degree will add up to 40 new STEM graduates annually to FAU's profile. Finally, with its focus on business and trade to and from Latin America, the program will attract Underrepresented Minority (URM) students.

The STEM designation of the program has also been recommended by the Hanover Research report (Appendix D). It notes that the STEM designation will help FAU attract international students, noting that the 5 benchmarked programs in its report have the STEM designation and heavily advertise this feature on their websites.

F. Identify any established or planned educational sites at which the program is expected to be offered and indicate whether it will be offered only at sites other than the main campus.

The FAU MSBA courses will be offered at FAU's main Boca Raton campus delivering classes in hybrid format in Hy-Flex classrooms and labs which provide video recordings of the lectures, thus facilitating the access for students. Therefore, students will be able to complete the program by attending the courses in person or remotely through distance learning. We also plan to stream cast the lectures to other FAU campuses, so students living in Davie or Jupiter campuses can have the opportunity to be actively engage and attend the classes remotely.

The hybrid mode of program delivery is also recommended by Hanover Research report, noting that this mode draws on the advantages of the face to face and remote modes: "…while distance education elements can help FAU stand out in the competitive landscape, it may want to consider a flexible, hybrid delivery option rather than a fully-online option."

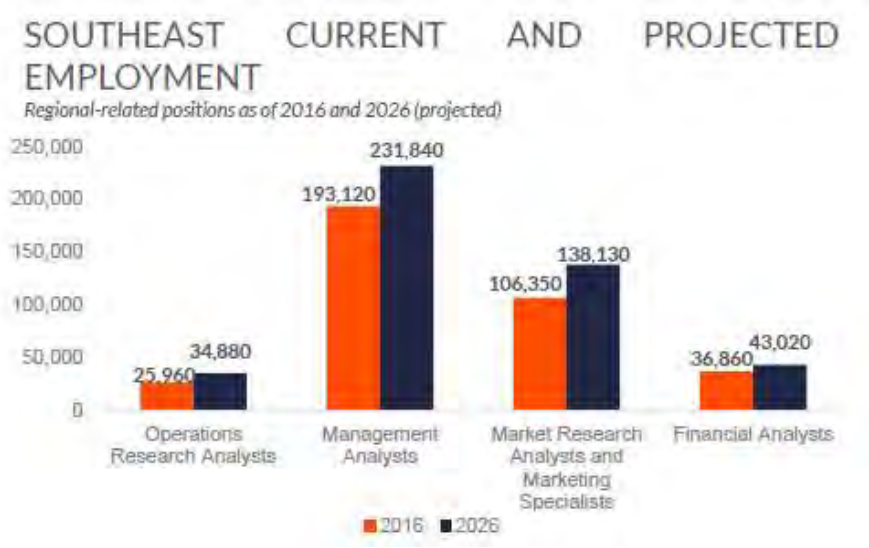
INSTITUTIONAL AND STATE LEVEL ACCOUNTABILITY

II. Need and Demand

A. Need: Describe national, state, and/or local data that support the need for more people to be prepared in this program at this level. Reference national, state, and/or local plans or reports that support the need for this program and requests for the proposed program which have emanated from a perceived need by agencies or industries in your service area. Cite any specific need for research and service that the program would fulfill.

The proposed program will provide the right balance of "hard" and "soft" analytical skills that will allow graduates to move to upper management. According to a 2017 Business-Higher Education Forum study, 95 percent of employers say that it is to hard to "find applicants who are well-rounded, with both analytical and social skills." The Hanover Research Report (Appendix D) similarly notes that "employers seek business analytics professionals who can help them interpret, manage, and analyze the growing variety of data that is available." Further, it notes the business analytics professionals with a well-rounded education may also have an advantage over those with a purely quantitative background, as employers look for

individuals with detailed knowledge of business principles who can assist with decision making," have "both analytical and social skills", and "are able to work in multidisciplinary contexts." The figure below shows the South-East current and projected employment in Business Analytics-related occupations.



According to the latest update by the Bureau of Labor Statistics (BLS) (2020), employment in business analytics-related occupations is projected to grow 5 percent from 2019 to 2029, faster than the average for all occupations, adding about 476,200 new jobs. "Globalization, a growing economy, and a complex tax and regulatory environment are expected to continue to lead to strong demand for accountants and auditors. In addition, increasing usage of data and market research in order to understand customers and product demand, and to evaluate marketing strategies, will lead to growing demand for market research analysts. Occupations with Business degrees with strong foundation in Business Analytics are Management analysts, Operations research analysts, Budget analysts, Market and Social Media Researchers, and others. Employment growth will be driven, in part, by the globalization, a growing economy, increasing usage of data, and a complex tax and regulatory environment.

The Florida Department of Economic Opportunity (DEO) lists "Management analyst" as the top 23d occupation gaining the most new jobs, with projected 18% growth between 2020 and 2028. "Operations Research Analysts" is listed as the 27th fastest growing occupation with projected 25.8% growth in the same period. "Financial analyst" has projected growth of 10.5%. Other business analytics related occupations, such as marketing research analyst, digital media analyst, etc., have similar growth.

The BOG-provided CIP-SOC job growth and median salary analysis by their Employment Projections Data Tool v3.1 SRS 2-4-21 has given detailed summary of the job and salary growth projection for positions under CIP 30.7102, from both BLS and Florida DEO. The Table below displays the results of the analysis.

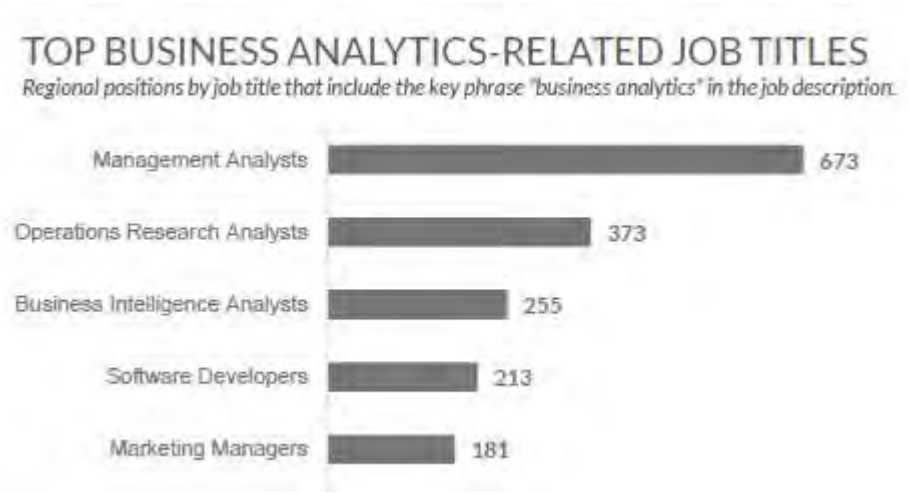
Table: BOG-provided CIP-SOC job growth and median salary analysis using the Employment Projections Data Tool v3.1 SRS 2-4-21, CIP 30.7102

	NATIONAL DATA FROM BLS						
	Employment 2019	Employment 2029	Employment Change, 2019-29 Number	Employment Change, 2019-29 Percent	Percent self employed, 2019	Occupational openings, 2019-29 annual average	Median annual wage, 2019
Management Analysts	876,300	970,200	93,800	10.7	14.8	87,100	$ 85,260
Market Research Analysts	738,100	868,400	130,300	17.7	4.3	84,200	$ 63,790
Statisticians	42,700	57,500	14,800	34.6	2.5	4,900	$ 91,160
	FLORIDA DATA FROM DEO						
	FL Employment 2020	FL Employment 2028	FL Employment Change, 2020-28 Number	FL Employment Change, 2020-28 Percent	**FL Total Annual Average Job Openings**	**FL 2019 Median Annual Wage**	
Management Analysts	56,478	66,550	10,072	17.8	7,053	$ 67,246	
Market Research Analysts	36,908	46,131	9,223	25	5,396	$ 58,843	
Statisticians	684	937	253	37	94	$ 72,738	

There are numerous publications and reports in the media that point to the ever-increasing demand for business analytics professionals. McKinsey Global Institute (MGI) produced a report, indicating that many industries are in need of employees with business analytics skills. According to the report, "Leaders in every sector will have to grapple with the implications of big data, not just a few data-oriented managers…There will be a shortage of talent necessary for organizations to take advantage of big data. The United States alone could face 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." Economist reports on how banks are using big data in a variety of ways to combat fraud and sell more products to consumers. Other media articles point to the importance of business analytics in Sports Management and Hospitality.

There is a vast shortfall of qualified Business Analytics talent. Conversations with the ITOM industry friends and guest speakers, the support letters from notable local companies and industry associations – ADT, Smart as Data Consulting, and South Florida Manufacturers Association (Appendix G) - and the surveys we conducted with the ITOM Advisory board (Appendix G) all point to what Hanover Research (Appendix D) has summarized: "Job opportunities are plentiful for business analytics professionals…Employers believe that demand for candidates with data science and analytics skills will far surpass the supply of trained graduates, suggesting unmet programming needs." BLS further reports that "the increasing importance of "Big Data" will drive demand for business analytics related occupations, translating to more employment opportunities in a variety of occupational fields" (Hanover Research, Appendix D). The Figure below shows the Southeast job posting for positions that have "business analytics" in their job description

The MSBA would be of immediate interest to employees and management of FPL, NextEra, and JM Family Enterprises, who have recently announced a partnership with the FAU College of Business to offer employees full tuition to attend courses.



We conducted a 3-question free response survey among the ITOM Advisory board members, notable small and large companies in South Florida areas, including JM Family and Citrix. The responses are given in Appendix G. Out of the 16 board members, 10 have responded. Below is a brief summary of the responses:

Q1. If your current and/or future employees complete such a graduate program and acquire the skills listed above, would your company benefit from their skills and knowledge?
Q1-Response summary: Given today's great demand for data, this skill set would be something of interest to all who responded. The ability to better understand and manipulate data to drive better decision making is increasingly important. As many companies become more data focused the different business units are put in a position where they have to evaluate 10s and 100s of metrics to make decisions.

Q2. Is your company or industry experiencing increased demand for Big Data analytics and employees with business (data) analytics skills? If not, do you anticipate such a demand within the next 3 years?
Q2-Response summary: All companies report that the Business Analytics becomes a main focus, some are at early stages of that demand, others are in advance and growing demand. All project growing demand in the next 3-5 years.

Q3. If you have any comments or ideas you want to share, please write them below
Q3-Response summary: Everything companies are doing now is dependent on data - all types of data from all different sources, and then used a variety of different ways. The ability to technically pull all this data together and manipulate it is very important, but equally so is the ability to interpret it and provide an answer or identify an issue/tell a story. Companies are currently in demand for these types of workers and we struggle to find them.

The need for Business Analytics talent in South Florida extends beyond skills acquired from bachelor's degree. The proposed STEM MS degree will help students advance to certifications such as Project Management, Lean Six Sigma and Certified Analytics Professional. Additionally, it will be able to fulfill the demand for advanced skills in both "management" and "analyst" job postings.

The proposed MSBA program will expand research funding opportunities for faculty members and students who are involved in the program and could strengthen FAU College of Business connections with STEM focused companies, leading to increased grant opportunities. Faculty

will have the opportunity to work together on case studies for the research-intensive courses, while students will have the opportunity to work with local companies to address real-world problems while applying techniques and skills learned in the classroom. FAU has built Big Data research expertise, supported by NIH, NSF and other substantial funding. For example: NSF-funded "Big Data Training & Research Laboratory"; NSF-funded Genomics and Genetic Research involving large data sets; Cyber Security and Cryptology: FAU is recognized as a National Center of Academic Excellence in Information Assurance/Cyber Defense Research (CAE-R) for academic years 2014-2019; NIH grant for dementia prevention program. College of Business is an active partner in these initiatives. Faculty will have the opportunity to work together for the research-intensive courses. ITOM researchers have been awarded $1.5 million US-DHSS HRSA (Health Resources and Services Administration) Grant (2019-2022) on analyzing the data of Veteran RNs in Primary Care. In 2020-2021 they developed a Business Analytics model for analyzing and optimizing COVID-19 related investments to mitigate epidemic and pandemic risks and published their results in top journals, such as "Risk Analysis".

B. Demand: Describe data that support the assumption that students will enroll in the proposed program. Include descriptions of surveys or other communications with prospective students.

Hanover research recommends that we proceed with the development of the MSBA program, noting that the "Student demand will likely continue to be strong for this offering in the foreseeable future." Their analysis (Appendix D) has found that the student demand for business analytics related degrees is strong at every geographic level and that the "Market conditions in the Southeast region are favorable for an additional MS in Business Analytics program." The report shows that "the share of students considering a data analytics master's program housed within a business school increasing from 7 percent in 2013 to 19 percent in 2018." Further, it writes that between 2019 and 2020, 71% of data analytics programs operated by business schools reported an increase in applications, and that between 2014 and 2018 master's degree conferrals in business analytics-related fields grew at an annualized rate of 49.4% in the Southeast, which is far surpassing the growth in conferrals across all master's programs at 38.4 % in the nation.

Hanover research points that, while student completions in degrees in Business Analytics in Florida are increasing at an average annual rate of about 4-6% across Florida, the Florida Department of Economic Opportunity projects a 10% increase in occupations that require a Bachelor's or higher degree in the Management Science cluster by 2023.

Further, the research report notes that business analytics programs can appeal to some mid career professionals "who are seeking advancement in their own companies, particularly as data becomes increasingly accessible to organizations when making important business decisions." We report similar findings after surveying our business students, the MIS Student Association, and the ITOM Advisory Board as described below.

During January-February 2021 we conducted a survey among 116 undergraduate students in the ITOM at FAU. 93% of the surveyed students agree that a Master of Science in Business Analytics program will be beneficial to society in general and the FAU community in particular; 87% indicated they know of a friend or a colleague who would be interested in taking this degree; and 65% of the undergraduate students indicated they themselves were very interested or somewhat interested in taking this degree. In 2020 we also conducted a separate survey among the current graduate students at ITOM. Of the 23 students who responded, 78.26% completely agreed that their current or past organization values

employees with business analytics skills.

Other key indicators of student interested in the proposed program are:

1. Increased employer demand for master's-level Business Analytics professionals indicates an opportunity for the program development. As discussed above, the Hanover Research reports that the local and state demand for master's-level Business Analytics professionals increased consistently, with average month-to-month growth rates of over three percent.
2. Reported high earnings in relevant occupations will attract prospective students to the program. The average starting salary in 2018 for a MSBA is $83,066, up from $79,232.
3. Nationally, less than 10% of students in the field closely related to Business Analytics are black, and similarly, for women and Hispanic population. By encouraging minority and women students to pursue the MS study, FAU will produce more Business Analytics professionals who are underrepresented minority.

C. If substantially similar programs (generally at the four-digit CIP Code or 60 percent similar in core courses), either private or public exist in the state, identify the institution(s) and geographic location(s). Summarize the outcome(s) of communication with such programs with regard to the potential impact on their enrollment and opportunities for possible collaboration (instruction and research). In Appendix C, provide data that support the need for an additional program.

Similarity with Other Programs				
Institution Name	**Public/ Private**	**Location**	**CIP Code**	**Program Name**
Florida International University (FIU)	Public	Miami	52.1301 52.1206	MBA in Business Analytics* MS in Health Informatics and Analytics
Florida State University (FSU)	Public	Tallahassee	52.1301	MS in Business Analytics
University of Central Florida (UCF)	Public	Orlando	30.7102	MS in Business Analytics*
University of Florida (UF)	Public	Gainesville	11.0501	MS in Information Systems and Operations Management-Business Analytics
University of North Florida (UNF)	Public	Jacksonville	52.1301	MS in Business Analytics*
University of South Florida (USF)	Public	Tampa	11.0501	MS in Business Analytics & Inf Systems
Florida Gulf Coast University (FGCU)	Public	Fort Myers	52.1201	MS Information Systems & Analytics
University of Miami (UM)	Private	Miami	52.1301	MS in Business Analytics
University of Tampa (UT)	Private	Tampa	52.1301	MS in Business Analytics

* Preproposal just approved

Only one university, University of Central Florida, has submitted a preproposal, at the same date as FAU's preproposal (February 4, 2021), for MS in Business Analytics with CIP 30.7102. The UCF program will be housed in the Economics department and its focus is on economics,

mathematics and statistics, as well as software development. Per the program description in the UCF pre-proposal, their program differs in flavor from MIS/Management Science programs. Since the UCF program is not yet created, no enrollment data are available.

Three SUS universities offer MS in Business Analytics with CIP 52.1031. The CIP 52.1031 altogether has Management Science focus.

The FSU's program (15 enrolled and 14 degrees conferred for 2018-2019), has a more quantitative and statistical focus, distinct from our proposed MSBA program that aims to provide the right balance of "hard" and "soft" analytical skills that will allow graduates to move to upper management.

The FIU program in Health Informatics and Analytics is fully online and designed for healthcare professionals. Our program, delivered in a hybrid mode, has a different focus and targets a different audience offering a multidisciplinary perspective from Marketing, Supply Chain, Finance, Data security, Sports, Hospitality, and Social Media. However, our proposed program would be a prefect addition to FIU's healthcare-orientated program, for training place-bound learners in various South Florida job openings. It can provide a pathway to executive roles for under-represented groups.

The FIU's newly implemented MBA in Business Analytics provides general business education typical for MBA, such as accounting, finance, marketing, and organizational behavior, while our MSBA is exclusively focused on analytics methods and techniques and Artificial Intelligence in various business sectors. Fall 2020 was the first semester of implementation of the FIU's MBA in Business Analytics, no enrollment or conferred degree data is available.

UNF's program is designed to serve the large working professional business community of the 1.3 million-populated Jacksonville area and is streamlined for the specifics of North Florida business environment and needs. The target audience differs from the South Florida student and professional audience.

Other programs with different CIP codes are computer science-orientated (e.g., FIU and USF), or general MIS degree with analytics concentration (e.g., FGCU and UF).

Impact on enrollments

There is very little overlap in the target markets of the programs listed above according to discussions with several competing program directors. Geographic markets are independent from all programs except FIU. FIU is located approximately 50 miles from the FAU Boca Raton campus. There may be a slight overlap in parts of Broward County. That said, the FIU programs have different focus and do not substantially overlap with the FAU's proposed MSBA program. Based on the Hanover Research report, the "Market conditions in the Southeast region are favorable for an additional MS in Business Analytics program." We project that our MSBA program will complement the current FIU programs both geographically (north of Broward to Palm Beach), and in terms of focus, delivery modes, and delivery times.

No SUS institution has expressed concerns about impacted enrollments at the CAVP Academic Coordinators Group and the Board of Governors staff meeting on February 4, 2021, when our pre-proposal was presented.

Potential Collaboration

With the trans-disciplinary nature of our program, the collaborative opportunities with other SUS programs (e.g., computer science and mathematics oriented or FIU's MS in Health Informatics & Analytics) will help meet the growing employment opportunities. There is always the ability to collaborate on research that has a statewide impact. University of South Florida has been hosting since 2017 the Florida Business Analytics Forum - an event which brings industry, academia, and government together to showcase topics of interest within the Florida Business Analytics and Artificial Intelligence. Academic experts, including FAU faculty, have participated and spoken at the Forum. Faculty from SUS institutions including FIU, UF, and USF have been engaged in discussions and sharing of experience about MS in Business Analytics programs, specifically ideas how to market their programs, enrollments projections, and curriculum specifics. The Forum provides an opportunity for exchanging of ideas and forging further collaborations. We would encourage continued expansion of the Forum or similar events to bring institutions together to forge research and teaching collaboration.

The ITOM Chair faculty have had active discussions with Dr. Balaji Padmanabhan from University of South Florida, Anderson Professor of Global Management, the director of the Center for Analytics & Creativity. As former Department Chair and External Reviewer of the ITOM Academic Review, he shared with us his insights for program, curriculum and Center development, guided us through marketing and enrollment management strategy, and advised us on how to leverage our strength to build a strong Business Analytics program in our department.

D. Use Table 1 in Appendix A (1-A for undergraduate and 1-B for graduate) to categorize projected student headcount (HC) and Full Time Equivalents (FTE) according to primary sources. Generally undergraduate FTE will be calculated as 30 credit hours per year and graduate FTE will be calculated as 24 credit hours per year. Describe the rationale underlying enrollment projections. If students within the institution are expected to change majors to enroll in the proposed program at its inception, describe the shifts from disciplines that will likely occur.

The students will take their courses at ITOM. Enrollment is projected to grow from a conservative total of 15 students in the first year to 60 by the fifth year. Per section B above, there is a substantial student demand as given by market research, university program analysis reports, and our own surveys. Most of the students expected to enroll in this program are students that graduated with a bachelor's degree in the College of Business at FAU. Since we develop and maintain an extensive network with industries and working professionals, a number of working professionals are also expected to enroll in this MSBA program to advance their professional career. Some other populations of students, such as from public and private local institutions, as well as national and international institutions, are also expected to enroll in the MSBA program.

Impact on ITOM programs and courses. All courses are currently existing and offered every semester. The new program will result in increased enrollments in each course, making the scheduling more efficient, with better classroom and lab utilization. Teaching productivity will increase allowing efficient use of faculty and classroom resources. Thus, overall, the proposed program will positively impact all ITOM programs since it will make the course offerings more reliable. The other graduate program at ITOM is the Master of Science in Information Technology Management (MSITM). MSITM will not be impacted, since the

degree offered in it is a general, broad Management Information System degree that prepares Information Systems Managers, Chief Information Officers, etc., of which Business analytics is only a small part. It has a different CIP, 52.1201, and serves a different audience. Since other universities offer Business Analytics degrees, the strong student enrollment (currently at 85 students) in the MSITM indicates that students purposely chose the MSITM degree as opposed to any other degree and thus are not expected to be willing to shift to Business Analytics.

Impact on the other departments at the College of Business. No other department at the College of Business offers similar programs or courses. Thus, we do not expect impact on their enrollments by introducing the MSBA program.

Impact on other colleges at FAU. MSBA is a unique graduate degree that serves specifically Business professionals, a well-defined audience seeking the very strong "Business Analytics" brand. This audience is unlikely to enroll in any other program instead. As indicated in Appendix A, Table 1, we project maximum 2 students in the first year and 1 student in the second year to shift from another FAU program, and no students shifting to MSBA from another program from year 3 on.

FAU offers an umbrella graduate Data Analytics degree – Master of Science in Data Science and Analytics (MSDSA). This degree was created as multidisciplinary, with currently 4 participating colleges, each offering their concentration. College of Business also has a concentration in MSDSA. Despite the substantial recruiting and advertising efforts by ITOM, interest among business students in MSDSA is minimal and there are no indications that it will grow. Surveys and feedback from Business students, as well as the Hanover Market Research study commissioned by FAU in December 2020, consistently point to a very strong interest in Business Analytics. The fact that MSDSA Business enrollments are low (total of 4 enrolled since the program's inception in Fall 2019), when the Business analytics degrees are booming, speaks that students will rather go to other institutions which offer Business analytics degrees, than enroll in MSDSA.

Appendix I shows the Data Science/Data Analytics programs housed at various SUS colleges. The data shows that all major SUS universities have at least one Master's programs in Business Analytics housed at Business Colleges, with 4 universities (including FAU) having pre-proposals approved during 2020-2021. Specifically, all colleges who have a Data Science degree, have also a Business Analytics degree. FIU (see program description in Appendix I) and UCF, similarly to FAU, first created a MS in Data Science with multidisciplinary tracks. They still, however, created later a separate Business Analytics degree that specifically addresses the business students' needs.

The data, therefore, point that Data Science and Business Analytics have shaped to be clearly distinct fields of study, each establishing a very strong brand in the Science/Engineering and Business community, respectively. One umbrella program such as MSDSA does not successfully serve both distinct audiences and cannot leverage the opportunities currently abundant in the market. This is a nationwide and statewide phenomenon, and Universities have taken notice, responding by creating both types of degrees.

The MSDSA degree will not lose enrollments, since the audience it serves seeks specifically the "Data Science" brand and thus is unlikely to shift to Business Analytics.

E. Indicate what steps will be taken to achieve a diverse student body in this program. If the proposed program substantially duplicates a program at FAMU or FIU, provide, (in consultation with the affected university), an analysis of how the program might have an impact upon that university's ability to attract students of races different from that which is predominant on their campus in the subject program. <u>The university's Equal Opportunity Officer shall review this section of the proposal and then sign and date Appendix B to indicate that the analysis required by this subsection has been completed</u>.

FIU and FAMU were part of the CAVP discussion on Feb 4 and both were supportive of the program and had no concerns about any negative impacts on their enrollments.

FAU is one of the most ethnically diverse institution in the State of Florida (29th nationwide). Minorities currently make up 44.83% of the FAU enrollment, and FAU is designated by the DOE Office of Postsecondary Education as a minority serving institution. Over the last five years, black and Hispanic enrollments have increased more than that of any other groups; FAU's student body will soon be a "majority minority" mirroring the predicted demographic composition of the USA in the near future. Approximately 33.22% of graduate students at FAU in related programs belong to underrepresented minority groups. Thus there is already a large and diverse pool of students from which this program can recruit. Given the composition of the current ITOM students in the MIS degree, we can confidently predict that Under-represented minorities (URM) will be well represented in the new program. This information was provided by FAU IEA office and approved. Additionally, we will proactively engage in the following initiatives to recruit URM students:

1. Reach out to professional associations that have specific minority outreach initiatives. For example, Association of Business Analytics Minority Council; CIO Council's initiatives on URMs, etc.
2. Reach out to Diversity officers in the College of Business industry affiliates. College of Business has thriving relationship with industries that send their professionals to the college programs to enhance their education. For example, JM Family, Florida FPL, and many others, continuously send their employees to obtain or enhance their education. We will work directly with Diversity officers of the companies to identify potential employers from the URM that would want to continue their education and we will directly promote to them the new program, by organizing Information sessions, panels, etc.
3. Reach out to the ITOM Advisory Board and companies that specifically work with URM to train and advance their careers in technology. We will establish collaboration with Coding Bootcamps and Organizations That Are Helping To Close The Diversity Gap In Tech, such as "Girl Develop It " (https://www.girldevelopit.com/), Code2040 (http://www.code2040.org/tech-trek), Code Craft Lab, and others which are focusing their efforts on girls and minority kids
4. We will reach to Broward college and, with the help of their advisors, identify minority students that would be interested to continue their education in the MSBA. We will provide one on one training and advising to students that have intention but may be short of prerequisites or credits to be able to successfully apply.

III. Budget

A. Use Table 2 in Appendix A to display projected costs and associated funding sources for Year 1 and Year 5 of program operation. Use Table 3 in Appendix A to show how existing Education & General funds will be shifted to support the new program in Year 1. In narrative form, summarize the contents of both tables, identifying the source of both current and new resources to be devoted to the proposed program. (Data for Year 1 and

Year 5 reflect snapshots in time rather than cumulative costs.)

All of the faculty members participating in the degree program currently hold full time positions at ITOM, College of Business, and are sufficient to initiate the program. The courses that will be part of the new degree program are all currently taught, existing courses. As we continue to manage enrollments and make the scheduling more efficient by better classroom and lab utilization, as well as by offering the courses when the students are most likely to take them, we do not anticipate needing additional funds for faculty or labs. We will rely on reallocation of ITOM resources to accomplish the goal to deliver the program and provide the projected growth. The faculty salary and benefits needed to support this program will come entirely from reallocated base E&G funds. For Year 1, the budget includes $85,175 in funds reallocated from the department to fund faculty salaries and benefits for the current faculty members in the program. The reallocated salaries and benefits extend into the fifth year and include any increases in percent effort for current faculty for a total of $104,139 for Year 5. See Table 4 for a complete listing of faculty involved with the program.

Reallocated base funding is also being used to cover one AMP Budget Coordinator position at 1% effort ($1,204) to support the overall administrative functions of the program; and one USPS Graduate Programs coordinator position at 3% effort in Year 1 ($3,325) and 6% effort by Year 5 ($6,650) based on the anticipated growth in student enrollment. The Department currently pays 4 graduate teaching assistantships (GTA) for full-time students. Funding for one position would be reallocated in Year 1 to support this program ($18,000). By Year 5, we anticipate the number of GTAs to increase to two based on the projected full-time enrollment ($36,000). Expenses in Table 2 ($3,000 in year 1; $4,000 in year 5) include printers, copier, brochures, travel, phones, postage, printing, office supplies, information technology supplies, and specialized software. This proposed program is a priority for the ITOM such that funding will be reallocated to match the ITOM priorities.

B. Please explain whether the university intends to operate the program through continuing education, seek approval for market tuition rate, or establish a differentiated graduate-level tuition. Provide a rationale for doing so and a timeline for seeking Board of Governors' approval, if appropriate. Please include the expected rate of tuition that the university plans to charge for this program and use this amount when calculating cost entries in Table 2.

The proposed program will operate as a regular E&G funded program. The current tuition rate for this program, per the FAU tuition rates for 2020-2021, would be as follows:
-Graduate Resident student: $303.71 Tuition, $68.11 fees, Total $371.82 per credit hour
-Graduate Non-Resident student: $303. 71 Tuition, $723.10 fees, Total $1,026.81 per credit hour

C. If other programs will be impacted by a reallocation of resources for the proposed program, identify the impacted programs and provide a justification for reallocating resources. Specifically address the potential negative impacts that implementation of the proposed program will have on related undergraduate programs (i.e., shift in faculty effort, reallocation of instructional resources, reduced enrollment rates, greater use of adjunct faculty and teaching assistants). Explain what steps will be taken to mitigate any such impacts. Also, discuss the potential positive impacts that the proposed program might have on related undergraduate programs (i.e., increased undergraduate research opportunities, improved quality of instruction associated with cutting-edge research, improved labs and library resources).

No programs will be impacted by a reallocation of resources. Undergraduate programs will not be impacted at all. All graduate courses are being taught by graduate faculty at ITOM. A positive impact to all departments is that the existing graduate classes with low enrollment will see increase in enrollment due to the new program. Thus, courses that could not be offered regularly due to low enrollments will meet enrollment targets, while courses that were traditionally run with small numbers of students will increase in size. This program is also likely to increase enrollment in the doctoral programs as a few students complete the MSBA degree and move into doctoral programs.

D. Describe other potential impacts on related programs or departments (e.g., increased need for general education or common prerequisite courses, or increased need for required or elective courses outside of the proposed major).

The potential impact, if any, is to the minimum in assignment re-allocation, well within the regular practices of reassignments and reallocation COB implements in its drive for productivity and efficiencies. No increased need in common prerequisites or required classes is projected. All the existing classes that are part of the proposed program have ample capacity to absorb the additional enrollments that will result in when the MSBA program is implemented.

E. Describe what steps have been taken to obtain information regarding resources (financial and in-kind) available outside the institution (businesses, industrial organizations, governmental entities, etc.). Describe the external resources that appear to be available to support the proposed program.

The program has access to research programs and resources that are sponsored by industrial and governmental collaborators. We will explore opportunities for education and research grants and scholarships from industry associations and focus groups in large companies in South Florida, port management, cybersecurity, topological and business data analysis, etc. Local industry (i.e. JM Family, Modernizing Medicine, Citrix, Port of Miami, Port Everglades, and Port of Palm Beach, Florida FPL, Nextera and many others) will provide great opportunities for internships for the students in the MSBA program.

IV. Projected Benefit of the Program to the University, Local Community, and State

Use information from Tables 1 and 2 in Appendix A, and the supporting narrative for "Need and Demand" to prepare a concise statement that describes the projected benefit to the university, local community, and the state if the program is implemented. The projected benefits can be both quantitative and qualitative in nature, but there needs to be a clear distinction made between the two in the narrative.

The proposed program will have a clear benefit to the state, local, and university community. Hanover Research (Appendix D) has summarized that "Job opportunities are plentiful for business analytics professionals…Employers believe that demand for candidates with data science and analytics skills will far surpass the supply of trained graduates, suggesting unmet programming needs." The Florida Department of Economic Opportunity projects a 10% increase in occupations that require a Bachelor's or higher degree in the Management Science cluster by 2023. Judging by the job postings, local (Miami-Fort Lauderdale-West Palm Beach) demand for master's-level business analytics professionals increased consistently, with average month-to-month growth rates of over three percent.

Hanover research notes that, even though student completions in degrees in Business Analytics in Florida are increasing at an average annual rate of about 4-6% across Florida, there will be a deficit of up to 6% demand not being supplied by the currently offered programs at Florida universities. South Florida and local economy will also benefit by the emerging talent with skills in business analytics, as evident by the survey among the members of the ITOM Advisory Board and the support letters given in Appendix G.

The FAU Career Center reports that they continually receive requests for students with Business Analytics skills. The MSBA would be of immediate interest to employees and management of JM Family Enterprises, Nextera, and Florid FPL who have recently announced a partnership with the FAU College of Business to offer employees full tuition to attend courses.

Additionally, as a major Hispanic Serving Institution, the proposed program will provide learning opportunity for large number of underserved populations.

The proposed program will produce up 60 MSBA graduates annually after five years. These graduates will contribute their talent to generate broader economic impact on the regional and state economic development.

V. Access and Articulation – Bachelor's Degrees Only

A. If the total number of credit hours to earn a degree exceeds 120, provide a justification for an exception to the policy of a 120 maximum and submit a separate request to the Board of Governors for an exception along with notification of the program's approval. (See criteria in Board of Governors Regulation 6C-8.014)

We are proposing a degree in Business Analytics at Master's level. Therefore, this section does not apply to our proposal.

B. List program prerequisites and provide assurance that they are the same as the approved common prerequisites for other such degree programs within the SUS (see link to the Common Prerequisite Manual on the resource page for new program proposal). The courses in the Common Prerequisite Counseling Manual are intended to be those that are required of both native and transfer students prior to entrance to the major program, not simply lower-level courses that are required prior to graduation. The common prerequisites and substitute courses are mandatory for all institution programs listed, and must be approved by the Articulation Coordinating Committee (ACC). This requirement includes those programs designated as "limited access."

If the proposed prerequisites are not listed in the Manual, provide a rationale for a request for exception to the policy of common prerequisites. NOTE: Typically, all lower-division courses required for admission into the major will be considered prerequisites. The curriculum can require lower-division courses that are not prerequisites for admission into the major, as long as those courses are built into the curriculum for the upper-level 60 credit hours. If there are already common prerequisites for other degree programs with the same proposed CIP, every effort must be made to utilize the previously approved prerequisites instead of recommending an additional "track" of prerequisites for that CIP. Additional tracks may not be approved by the ACC, thereby holding up the full approval of the degree program. Programs will not be entered into the State University System Inventory until any exceptions to the approved common prerequisites are approved by the ACC.

We are proposing a degree in Business Analytics at Master's level. Therefore, this section does not apply to our proposal.

C. If the university intends to seek formal Limited Access status for the proposed program, provide a rationale that includes an analysis of diversity issues with respect to such a designation. Explain how the university will ensure that Florida College System transfer students are not disadvantaged by the Limited Access status. NOTE: The policy and criteria for Limited Access are identified in Board of Governors Regulation 6C-8.013. Submit the Limited Access Program Request form along with this document.

We are proposing a degree in Business Analytics at Master's level. Therefore, this section does not apply to our proposal.

D. If the proposed program is an AS-to-BS capstone, ensure that it adheres to the guidelines approved by the Articulation Coordinating Committee for such programs, as set forth in Rule 6A-10.024 (see link to the Statewide Articulation Manual on the resource page for new program proposal). List the prerequisites, if any, including the specific AS degrees which may transfer into the program.

We are proposing a degree in Business Analytics at Master's level. Therefore, this section does not apply to our proposal.

INSTITUTIONAL READINESS

VI. Related Institutional Mission and Strength

A. Describe how the goals of the proposed program relate to the institutional mission statement as contained in the SUS Strategic Plan and the University Strategic Plan (see link to the SUS Strategic Plan on the resource page for new program proposal).

The mission of the SUS is to "….provide undergraduate, graduate and professional education, research, and public service of the highest quality." The goals of the proposed MSBA degree are to provide graduate students with essential skill sets in analyzing real world data and processes in Business Analytics and a broad understanding of challenges and opportunities, along with the research and inquiry skills necessary to conduct independent research and answer questions related to Business Analytics. The MSBA degree will provide cross-disciplinary training with a core curriculum in Business Analytics and operations management with additional coursework in the area of specialization, Business Analytics. Hands-on learning experience courses with real world data and tools and platforms such as IBM Watson, PowerBI, Tableau, Google Analytics, SAS Artificial Intelligence Business Platform, and many others, will prepare students for the workplace with practical experience and strong communication skills. Graduates will be well prepared with rich hands-on data-driven experience and data analytic skills to enter the high demand workforce in the era of Business Analytics. The new program will thus enhance both graduate education and public service in fields important not only to South Florida but globally, by producing graduates well situated to enter the workforce ready to apply their skills to research, management and administrative questions related to Business Analytics. Graduates are expected to enter into private industry, government (i.e. port management), private sector consulting, non-profit

organizations, and higher education.

The MSBA Program will also seek to provide public service through student internships with federal, state and local agencies and organizations. The internships would offer opportunities for FAU students to collect data, participate in research and monitoring efforts, learn new skills, obtain experience, and provide various types of support to local partners on research projects related to Business Analytics and operations and logistics data management. Thus, the MSBA Program, its faculty and students will become a resource for local communities, government agencies, and local businesses in their efforts to find innovative solutions to problems facing coastal Florida.

B. Describe how the proposed program specifically relates to existing institutional strengths, such as programs of emphasis, other academic programs, and/or institutes and centers.

College of Business has a rich mixture of specializations and certificates in various domains that gives opportunity to the students for multi-disciplinary exposure. For example, MBA students, Accounting graduate students, as well as MSITM student all have opportunities to choose a concentration in Business Analytics, Operations and Business Analytics, and others. The new program aligns well with this mixture, as it will utilize already present expertise in the domain with an adequate curriculum structure that will enable top talent to graduate with a degree in Business Analytics.

ITOM faculty conduct world class research related to the field of Business Analytics. The research interests of all participating faculty range from Business Analytics, Healthcare analytics, Business Analytics security, Supply Chain Security, global trade, transportation and logistics, statistical modeling with SAS, SPSS, and SEM tools, machine learning and data mining, business analytics, cybersecurity and business analytics for social good. They publish in premier, highest ranked outlets and their research impacts scholarship worldwide. The Center for Cryptology and Information Security, to which ITOM is a founding member, was recognized as a National Center of Academic Excellence in Information Assurance/Cyber Research. The program aligns well with the FAU platform of Data Analytics, to whose steering committee ITOM is active member. ITOM has also been a founding member of the Master of Science in Data Science and Analytics (MSDSA) program at FAU and has contributed its full intellectual and logistical skills toward the success of that program. ITOM is a member of the curriculum committee of the MSDSA and is actively involved in recruiting students to that program.

C. Provide a narrative of the planning process leading up to submission of this proposal. Include a chronology in table format of the activities, listing both university personnel directly involved and external individuals who participated in planning. Provide a timetable of events necessary for the implementation of the proposed program.

The ITOM faculty has been planning to create this program since 2015. The need for this degree was discussed in the Florida State University System's Academic Program Review for ITOM that was conducted in 2013-2014 and was elicited as one of the two goals in the 7-year plan. Since then ITOM has hired academic experts in the field. The ITOM faculty have spearheaded the planning process through active curriculum discussions and strategizing. ITOM actively joined and participated in the implementation of the University strategic move to create a multidisciplinary Master of Science in Data Science and Analytics (MSDSA), in which there is a Business concentration.

Following enrollment analysis in the MSDSA-Business concentration, as well as studying the other SUS experiences, we revisited the pan for creating the MSBA program. After several meetings with faculty at large, Chair, and Dean, ITOM prepared a statement-proposal, that was discussed with the Provost and Senior Associate Provost Dr. Russ Ivy in January 2020. The proposed degree program was added to FAU's accountability plan that was approved in 2020 by both the BOT and the BOG. Following several meetings with Dr. Ivy, in October 2020 we commissioned the Hanover Research Market Survey to assess the workforce needs and student demand for this degree. The Hanover Research survey indicated a need for this program. We then proceeded with developing the pre-proposal and presented it to Dr. Ivy. After several revisions, Dr. Ivy presented the preproposal for approval at the CAVP Curriculum Working Group on February 4, 2021. The ITOM Chair spearheaded the proposal writing. Following discussions with faculty, Chair, and Dean, the ITOM Chair presented the first draft to Dr. Ivy on February 15, 2021. With his guidance, we finalized the full proposal, obtained the necessary signatures, and presented it to the ITOM department for vote in March 2021.

Planning Process

Date	Participants	Planning Activity
September 2019	Senior Associate Provost, Chair of ITOM,	Initial plan for a new degree program
January 2020	Senior Associate Provost, Dean of College of Business, Chair of ITOM	Follow up the initial plan for a new degree program
February 2020	Chair of ITOM, Dean and Associate Deans at COB	Choice of CIP Code discussed
September 2020	Provost's Office	MSBA included in the Academic Program Planning for AY 2020 2021
October 2020	Chair of ITOM, Dean and Associate Deans at COB	Program curriculum concepts, market needs, and delivery strategy discussed
October 2020-December 2020	EAB Hanover Research contracted by FAU	Market Survey and Analysis by EAB completed
January 2021	Pre-proposal developed by the Chair of ITOM	The pre-proposal was submitted to Senior Associate Provost, then submitted by Senior Associate Provost for CAVP approval
February 4 2021	Senior Associate Provost, Dean of COB, Chair of ITOM	Senior Associate Provost announced the approved Pre-proposal to Chair of ITOM
February 9, 2021	Senior Associate Provost, Chair of ITOM	Discuss the draft of full proposal
February 2020	Chair of ITOM	Finalize the full proposal
March, 2020	Graduate committees/Deans Senior Associate Provost, COB Associate Dean of Academic Affairs, Chair of ITOM	Departmental and College-level approvals
March 24, 2021	University GPC	Approval
March 31, 2021	UGC	Approval
April 15, 2021	UFS Steering	Approval
April 26, 2021	UFS	Approval
June	BOT	

Events Leading to Implementation

Date	Implementation Activity
February 4, 2021	Approval of pre-proposal by CAVP
February 15, 2021	The 1st draft of the full proposal submitted to Senior Vice Provost for revision

February 2020	Full proposal final version
March 1, 2020	Submit for department and college approvals
Mar. 16, 2021	Submit proposal to UGPC (Graduate College)
March 24, 2021	UGPC approval
March 31, 2021	UGC approval
April 15, 2021	UFS Steering approval
April 26, 2021	UFS approval
June	BOT approval

VII. Program Quality Indicators - Reviews and Accreditation

Identify program reviews, accreditation visits, or internal reviews for any university degree programs related to the proposed program, especially any within the same academic unit. List all recommendations and summarize the institution's progress in implementing the recommendations.

The Program will be hosted by the Department of Information Technology and Operations Management (ITOM). ITOM program reviews are conducted based on several processes:

1. BOG-mandated seven-year program review. The last program review was conducted in 2013. The major findings of the Review Team were that "At the department, college and university levels there appear to be several positive initiatives that can provide a strong tail wind for future growth and productivity in the Department of Information Technology and Operations Management (ITOM)." In their conclusion, the review team wrote that "Overall, the ITOM department is in good shape, well managed, and with a caring teaching faculty and growing strength in scholarly research. Enrollments are strong and growing and the students seem well pleased with their undergraduate and graduate educational experiences. However, this growth indicates a corresponding need for more faculty members, particularly those with strong research skills. No major problems or deficiencies were found and the findings and recommendations that are listed above are designed to assist the Department and the College to make further improvements in an already strong department".

Following the very constructive recommendations of the review team, ITOM hired 4 new tenure track and 1 tenured faculty, as well as 2 instructors. One tenure track faculty was tenured and promoted to Associate professor. Currently ITOM has the faculty resources it needs to run highest quality and fast-growing programs and is positioned to be competitive in teaching, research, and service. Goal 1 from the "Strategic Goals and Action Plans" was to distinguish and brand the Department and the College in Business Analytics. ITOM has worked toward this goal and has been collaborating with the other colleges to help FAU gain distinction in Artificial Intelligence and Data Analytics. The current proposed program in Business analytics will be one step further in this direction.

2. Annual assessment and Academic Learning Compacts, as required by the State of Florida, done via the assessment portal at http://www.fau.edu/iea/assessment/index.php.

3. SACSCOC Accreditation

4. AACSB - The Association to Advance Collegiate Schools of Business International accreditation of the College of Business (COB). COB is accredited by a recognition that only the top 5 percent of the world's leading business colleges have earned. FAU is among the top-15 largest AACSB-

accredited colleges of business in the United States, with a comprehensive slate of interdisciplinary and professional development programs.

The FAU College of Business has been recognized by numerous media outlets, including U.S. News & World Report, which ranked FAU's online graduate business programs 32nd in the nation in 2017, and Bloomberg Businessweek, which ranked our Professional and Executive MBA 27th among public universities in the nation. Named one of the "Best Business Schools" by The Princeton Review and ranked as the best business school for veterans in Florida by U.S. News & World Report, the College of Business strives to inspire students, faculty and the regional business community to innovate and make fundamental and positive changes to the way business is conducted. The College offers undergraduate programs in Accounting, Economics, Finance, Health Administration, Hospitality and Tourism Management, International Business, Management, Management Information Systems and Marketing. Master's degree programs are available in Accounting, Business Administration, Economics, Health Administration, Information Technology and Management and Taxation. A doctoral program is offered in Business Administration. In addition, the School of Accounting offers an Honors Program. The College of Business's largest and most diverse constituency resides in its upper-division baccalaureate and professional programs. Additionally, the College of Business provides lifelong learning experiences through professional weekend programs and centers that focus on services marketing, technology, entrepreneurship and international business. The College's research and services advance business knowledge by synthesizing ideas in creative ways, thus contributing to South Florida's economic vitality and making the community a better place to live and work.

AACSB specific recommendations include needs to address faculty needs in concert with the college and department future enrollment growth. ITOM is currently hiring 4 faculty members to meet the growth of our programs.

The Department of Information Technology and Operations Management (ITOM)

The ITOM's strategic goal is to develop competence in information systems, operations management (including Business Analytics) and related decision-sciences disciplines for traditional and nontraditional students across the College of Business; to produce skilled individuals proficient in information technology and operations management who are able to contribute effectively to their organizations and communities in an ever-evolving technological environment; to engage in an active partnership with the business community; and to continually innovate and increase the quality of its educational and research activities in a manner that increases education effectiveness and global reach. ITOM offers in conjunction with College of Engineering the Master of Science in Information Technology Management (MSITM). The MSITM program is fully accredited with AACSB. Accreditation visits are every 5 years, the last visit being in January 2018. ITOM conducted internal review and submitted assessment. We intend on recommending the MSBA for AACSB accreditation. AACSB typically requires a minimum of 50% of the program content to be business related and taught by business faculty. ITOM houses the Business concentration of the MSDSA program.

ITOM's seven-year review, recommendations and action plan follow up are found in Appendix F. The goals, based on the recommendations are: 1) To distinguish the brand of the department and college in Business Analytics, and in particular to create various academic lanes for education in Business Analytics. The proposed degree will fulfil this part of the goals of the seven-year BOG's program review.

VIII. Curriculum

A. Describe the specific expected student learning outcomes associated with the proposed program. If a bachelor's degree program, include a web link to the Academic Learning Compact or include the document itself as an appendix.

Upon successful completion of this program of study, MS Business Analytics graduates will be able to:

- Demonstrate a broad knowledge, critical thinking, and a systematic understanding of the key concepts and principles of Business Analytics and Artificial Intelligence (AI) as applied to solving business problems.
- Systematically analyze, examine, and originally solve real-life AI and Business Analytics problems, underpinned by the theoretical business foundations at the forefront of the discipline
- Effectively communicate findings, solutions to problems and recommendations to a variety of interested parties across a company's departments and to either an academic or cross-cultural audience
- Work independently and in diverse groups on a variety of tasks related to research and problem solving, showing appropriate leadership styles for different situations in negotiating or influencing others, but recognizing and utilizing individuals' contributions in group processes.

Assessment Methods

- Course assignments will be graded by the instructors based on the target course objectives to reflect the knowledge grasp level.
- Student presentations will be graded using a rubric that evaluates communication, critical thinking, and synthesis skills (to be established).
- A system for collection and tracking post-graduation placement data (career path after leaving FAU) through email surveys will be developed by faculty and staff.

B. Describe the admission standards and graduation requirements for the program.

The College of Business seeks a diverse, highly qualified group of graduate students. Applications are evaluated on several factors emphasizing prior academic performance, GMAT or GRE scores, work experience, and the potential for scholarly and professional success. The MSBA program will follow the College of Business admission criteria which are as follows:

- Bachelor's degree in any discipline; no business prerequisites are required
- GPA approximately 3.0 or higher over the last 60 undergraduate credits
- GMAT/GRE - A combined score (verbal + quantitative) of at least 295 on the Graduate Record Examination (GRE) or a GMAT score of 500 or higher. GRE/GMAT scores more than five years old are normally not acceptable
- International students from non-English-speaking countries must be proficient in written and spoken English as evidenced by a score of at least 500 (paper-based test) or 213 (computer-based test) or 79 (Internet-based test) on the Test of English as a Foreign Language (TOEFL) or a score of at least 6.0 on the International English Language Testing System (IELTS); and
- Meet other requirements of the FAU Graduate College

Students are required to complete 30 graduate-level credits, or 10 three-credit courses (5000 level or higher), with a 3.0 GPA or better to graduate. The program does not offer a thesis option.

C. Describe the curricular framework for the proposed program, including number of credit hours and composition of required core courses, restricted electives, unrestricted electives, thesis requirements, and dissertation requirements. Identify the total numbers of semester credit hours for the degree.

Students are required to complete 30 graduate-level credits, or 10 three-credit courses (5000 level or higher), with a 3.0 GPA or better to graduate. Courses will generally be offered in a hybrid format, with face-to-face sessions complimented by online activities supported by Canvas. Hy-Flex classrooms and labs will be used which provide video recordings of the lectures, thus facilitating the access for students.

All courses exist in the catalog and are being successfully taught.

Curricular Framework

8 Required Courses (24 credits)

Course	Credits
GEB 6215 Communication Strategies for Business Professionals (and Core-course Follow-up)	3
ISM 6026 Management Information Systems and Technology	3
ISM 6136 Data Mining and Predictive Analytics	3
ISM 6404 Introduction to Business Analytics and Big Data	3
ISM 6405 Advanced Business Analytics	3
ISM 6427 Business Innovation with Artificial Intelligence	3
ISM 6555 Social Media and Web Analytics	3
QMB 6303 Data Management and Analysis with Excel	3

Electives (6 credits)

QMB 6616- Supply Chain Analytics	3
ISM 6316 IT Project and Change Management	3
ISM 6942 Graduate Information Technology and Operations Management Internship	3
MAR 6816 Marketing Analysis and Executive Action	3

Following the program launch and its growth within the next years, ITOM welcomes other colleges and departments to add electives to the program, so the interests of the students are served.

D. Provide a sequenced course of study for all majors, concentrations, or areas of emphasis within the proposed program.

Term	Course
Fall	GEB 6215 – Communication Strategies for Business Professionals (and Core-course Follow-up)
Fall	ISM 6026 - Management Information Systems and Technology

Fall	QMB 6303 Data Management and Analysis with Excel
Spring	ISM 6404 - Introduction to Business Analytics and Big Data
Spring	ISM 6136 - Data Mining and Predictive Analytics
Spring	Elective 1
Fall	ISM 6405 - Advanced Business Analytics
Fall	Elective 2
Fall	ISM 6555 - Social Media and Web Analytics
Fall	ISM 6427C - Business Innovation with Artificial Intelligence

E. Provide a one- or two-sentence description of each required or elective course.

Communication Strategies for Business Professionals (and Core-course Follow-up) (GEB 6215) 3 credits
Prerequisites: Admission to College of Business Master's Degree Programs
Course links writing and speaking strategies to (1) critical thinking for problem analysis/solution and persuasive proposals and (2) research for decision making. Students submit papers and presentations from core courses. Grading*: S/U*

Management of Information Systems and Technology (ISM 6026) 3 credits
Prerequisite or Corequisite: GEB 6215
A study and evaluation of information systems: types, development and use. Emphasis is on understanding information systems in the context of managerial use, problems, and opportunities.

Introduction to Business Analytics and Big Data (ISM 6404) 3 credits
This course provides an understanding of the business intelligence and business analytics processes and techniques used in transforming data to knowledge and value in organizations. Students also develop skills in analysing data using generally available tools, e.g., Excel.

Advanced Business Analytics (ISM 6405) 3 credits
Prerequisite: Graduate students only
An in-depth examination of business analytics methods of visualization, data mining, text mining and web mining, using various analytical tools. In a laboratory setting, investigates applications for smaller firms.

Supply Chain Analytics (QMB 6616) 3 credits
Prerequisite or Corequisite: ISM 6404
Students develop skills in modelling and optimization techniques for the analysis of strategic, tactical and operational supply chain problems. Problems range from inventory management, distribution planning and facility location to risk management and global sourcing.

Graduate Information Technology and Operations Management Internship (ISM 6942) 3 credits
Students gain valuable practical experience under the guidance of a supervisor in the work setting as well as a professor in the academic setting. Provides insights into the operations of businesses and organizations and allows students to hone their information technology

and operations management skills in a real-world setting.

Data Mining and Predictive Analytics (ISM 6136) 3 credits
Introduces the core concepts of data mining (DM) and its techniques, implementation and benefits. Course also identifies industry branches that most benefit from DM, such as retail, target marketing, fraud protection, health care and science, and web and e-commerce. Detailed case studies and using leading mining tools on real data are presented.

Information Technology Project and Change Management (ISM 6316) 3 credits
Course addresses key issues in managing information technology projects through a study of the project life cycle. Topics include planning and control, risk management, change management, portfolio management, and the use of project management software.

Social Media and Web Analytics (ISM 6555) 3 credits
Prerequisite: Admission to an FAU graduate program
Covers concepts and techniques for retrieving, exploring, visualizing and analyzing social network and social media data, website usage and clickstream data. Students learn to use key metrics to assess goals and return on investment and perform social network analysis to identify important social actors, subgroups and network properties in social media.

Data Management and Analysis with Excel (QMB 6303) 3 credits
Graduate students from all disciplines solve research and business problems by leveraging the most powerful productivity tool, Excel. Curation, management, analysis and visualization of information and data are covered by using PowerView, Vlookup charts, pivot tables, scenarios, functions and macro programming.

Business Innovation with Artificial Intelligence (ISM 6427C) 3 credits
Students gain a business perspective of artificial intelligence (AI) and other emerging technologies as drivers of innovation in businesses. They learn how AI is used in practice across organizations and industries, how to plan, manage and maintain AI projects, and how to address the AI challenges and implications for the organization and society.

Marketing Analysis and Executive Action (MAR 6816) 3 credits
Prerequisites: Graduate standing and MAR 6815
Builds decision-making capabilities through readings and cases concerning current marketing challenges, such as managing environmental change; marketing in international, high technology, and service contexts; conducting market planning and developing a marketing plan, etc. Learn to imbue corporate culture and business practice with marketing, customer service, social responsibility, and ethics.

F. For degree programs in the science and technology disciplines, discuss how industry-driven competencies were identified and incorporated into the curriculum and indicate whether any industry advisory council exists to provide input for curriculum development and student assessment.

The ITOM department has close ties to end users in both industrial and governmental sectors, as evident by the support letters provided in Appendix G. ITOM has Advisory Board of 16 industry leaders whose goals are to connect faculty and students to the industry, to inform us about the most recent developments in technology and needed skills, and to advise the department of curriculum development. Dr. Jonathan Sweet is a member of Palm Beach Tech Industry Association, and every semester he recruits leaders of prominent

companies to speak to our MIS Student Association (MISA) and organize company tours. Active industry members that regularly serve as guest speakers are Office Depot, Citrix, AutoNation, JM Family, SBA Communications, Modernized Medicine, MoreVisibility, ADT, and many others. In addition to surveying the ITOM Advisory Board (Appendix G), we tapped on all of the above to actively seek their input on what skills need to be developed in the graduates, and what courses we should offer.

G. For all programs, list the specialized accreditation agencies and learned societies that would be concerned with the proposed program. Will the university seek accreditation for the program if it is available? If not, why? Provide a brief timeline for seeking accreditation, if appropriate.

The FAU College of Business is proud to be an accredited member of AACSB International - The Association to Advance Collegiate Schools of Business, the hallmark of excellence in management education. Less than 5 percent of the world's business schools are accredited by the AACSB. In 2018, the College was one of 52 business schools to have its accreditation extended. In their recommendations to extend accreditation, the AACSB's Peer Review Team cited as particular strengths the College of Business' innovative market-based program offerings for graduate students, of which this program will become part of the portfolio. The proposed MSSCM program will be presented and reviewed in the next reaccreditation cycle. AACSB Accreditation visits are every 5 years, the last visit being in January 2018. ITOM conducted internal review and submitted assessment. During 2021-2022, ITOM and the College of Business (COB) will conduct the process of internal assessment and review for the AACSB 2023 re-accreditation visit. In Fall 2022 this assessment has to be completed and the COB report to AACSB is finalized. AACSB visits will be conducted in January-April 2023.

H. For doctoral programs, list the accreditation agencies and learned societies that would be concerned with corresponding bachelor's or master's programs associated with the proposed program. Are the programs accredited? If not, why?

We are proposing a degree in Business Analytics at Master's level. Therefore, this section does not apply to our proposal.

I. Briefly describe the anticipated delivery system for the proposed program (e.g., traditional delivery on main campus; traditional delivery at branch campuses or centers; or nontraditional delivery such as distance or distributed learning, self-paced instruction, or external degree programs). If the proposed delivery system will require specialized services or greater than normal financial support, include projected costs in Table 2 in Appendix A. Provide a narrative describing the feasibility of delivering the proposed program through collaboration with other universities, both public and private. Cite specific queries made of other institutions with respect to shared courses, distance/distributed learning technologies, and joint-use facilities for research or internships.

The MSBA courses will be delivered in hybrid format that combines face-to-face with remote instruction (20%-30%). Courses will be developed with the support of the FAU Center for eLearning (CeL) with the objective of earning the Quality Matters (QM) seal. All courses in the program are certified by the Center for e-Learning for online delivery. Some courses, such as ISM 6026 have already earned the QM seal, and two others are well on its way to earn the seal. QM is a highly regarded program that encourages and recognizes quality online course design. Courses are externally peer-reviewed based on the QM rubric.

No special facilities or financial support are required for the degree.

IX. Faculty Participation

A. Use Table 4 in Appendix A to identify existing and anticipated full-time (not visiting or adjunct) faculty who will participate in the proposed program through Year 5. Include (a) faculty code associated with the source of funding for the position; (b) name; (c) highest degree held; (d) academic discipline or specialization; (e) contract status (tenure, tenure-earning, or multi-year annual [MYA]); (f) contract length in months; and (g) percent of annual effort that will be directed toward the proposed program (instruction, advising, supervising internships and practica, and supervising thesis or dissertation hours).

Table 4 in Appendix A lists all full-time faculty associated with the program in Year 1 through Year 5 of the program. The following FAU-wide adopted scale is used for estimation in Table 4: We distinguish between "core courses" which are courses that would have a section with most of its enrollment from this new degree program and then "existing courses" for sections with a few seats taken by students in the new program. A "core course" section is 12.5% faculty effort and an "existing course" is 6.25%. Additionally, there is 10% effort for one administrator/advisor. The effort numbers are then transferred to Sheet 4, Appendix A columns H and L.

B. Use Table 2 in Appendix A to display the costs and associated funding resources for existing and anticipated full-time faculty (as identified in Table 4 in Appendix A). Costs for visiting and adjunct faculty should be included in the category of Other Personnel Services (OPS). Provide a narrative summarizing projected costs and funding sources.

The estimated equivalent cost associated with the full-time faculty salaries and benefits in Table 2 in Appendix A is projected to be $85,175.20. This cost will be from the re-allocation of funding from within ITOM. There are no new hires needed in the first 5 years of the program. Detailed costs associated with the program are given in Table 2 which is projected from Table 4 in Appendix A. The proposed budget includes 1 graduate teaching assistant per year in years 1,2, and 3, and 2 graduate teaching assistants per year for years 4 and 5, at the rate $18,000 per teaching assistant. The graduate teaching assistant positions are reallocated within the ITOM department. Additional details are presented in Table 2 in Appendix A.

C. Provide in the appendices the abbreviated curriculum vitae (CV) for each existing faculty member (do not include information for visiting or adjunct faculty).

See the appendices for all abbreviated CVs in Appendix H. Brief research interests of the faculty are given below.

Dr. Sunil Babbar is a professor of Operations Management in the Information Technology and Operations Management Department of the College of Business at Florida Atlantic University. He received his Ph.D. in Operations Management from Kent State University in Ohio. His primary research interests are in the areas of quality management, service quality, and business ethics. He has twice received the Researcher of the Year award of the College of Business at Florida Atlantic University. He has also received numerous awards for excellence in teaching including the Stewart Distinguished Professorship award of FAU's College of Business in 2007 and the Teaching Excellence Award in 2012 and 2016. He has

published some 35 articles in refereed journals with many of his articles appearing in leading journals such as *Journal of Operations Management*, *International Journal of Operations & Production Management*, *Academy of Management Executive*, *OMEGA*, *International Journal of Production Economics*, and *Long Range Planning*. His research has received recognition from the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) for its public policy implications. He serves on the editorial boards of a number of journals and is the recipient of the Best Reviewer Award of the *Decision Sciences Journal of Innovative Education* for 2010, 2011, and 2015.

Dr. Milad Baghersad is an assistant professor in the Department of Information Technology and Operations Management in the College of Business at Florida Atlantic University. He received his PhD in Business Information Technology from the Pamplin College of Business at Virginia Tech. Prior to joining FAU, he was a visiting faculty member at Cleveland State University. His primary research interests include Business Analytics disruptions and disaster operations management. Milad has published papers in peer-reviewed journals including the *Decision Sciences Journal*, *International Journal of Production Economics*, *Transportation Research Part E*, and the *Socio-Economic Planning Sciences*. He teaches Data Mining and Predictive Analytics to undergraduate students and Advance Business Analytics to graduate students.

Dr. Ravi S. Behara is a Professor in the Department of Information Technology & Operations Management in the College of Business at Florida Atlantic University. He is also currently the SBA Communications Distinguished Professor. His current research interests are in healthcare and service operations analytics. He has published in the *Journal of Operations Management, European Journal of Operations Research, International Journal of Operations and Production Management, International Journal of Production Economics, Decision Support Systems*, *IEEE Journal of Biomedical and Health Informatics, Journal of Big Data,* and *International Journal of Accounting Information Systems*, and in research books such as *Handbooks in Information Systems* and *Advances in Patient Safety*. His healthcare research has been NSF funded, and he is currently part of a research team that is funded by HRSA. His business experience includes operations consulting and working as an electrical engineer on global power plant construction projects. Dr. Behara holds a Ph.D. in Service Operations.

Dr. Pauline Chin is currently a full-time Faculty member in the Department of Information Technology and Operations Management (ITOM) in the College of Business at Florida Atlantic University, Florida, USA. Dr. Chin is an Information Technology Senior Instructor and has taught courses such as Information Systems Fundamentals, Management Information Systems, Advanced Systems Analysis and Design, as well as Data Communications and Networks. Dr. Chin received a Doctorate in Business Administration specializing in Decision and Information Sciences from the University of Florida, Gainesville, Florida in 2001. She also received a Master of Science in Business Administration, specializing in Management Information Sciences and a minor in Operations Management from Pennsylvania State University, State College, Pennsylvania in 1991, as well as a Masters in Educational Technology from Florida Atlantic University, Boca Raton, Florida in 2010. Dr. Chin's research interests include the adoption and management of information technology in developing and developed regions, specifically in the areas of information technology governance as well as innovations in educational technologies. She has published in the Journal of Global Information Management and Advanced Topics in Global Information Management and has presented at conferences such as the International Association for Management of Technology (IAMOT); Americas Conference on Information Systems(AMCIS), International Conference on Education and New Learning Technologies (Edulearn); the International

Technology, Education and Development Conference (INTED) and the Florida Statewide Symposium - Engagement in Undergraduate Research.

Dr. Joseph Compomizzi is an instructor of Business Communications Program in the College of Business at Florida Atlantic University. He earned a doctorate degree in Information Systems and Communications from Robert Morris University. Dr. Compomizzi also holds a master of science degree in Education from Duquesne University and a bachelor of science degree in Business Administration from Indiana University of Pennsylvania. He has taught an array of business and communications courses, prior to joining FAU, at Robert Morris University in Pittsburgh, PA and at Blue Ridge Community and Technical College in West Virginia. He also served as a Visiting Scholar at Jinan University in Hangzhou, China. Professionally, Dr. Compomizzi served the Diocese of Pittsburgh, PA as business manager responsible for strategic planning and operations, IT network management, and leadership development. As a director of education, he managed and directed the strategizing, structuring, staffing and assessment of education programs, as well as, providing educational consulting. Upon graduation with a degree in business administration, he was recruited by The Bank of New York- Mellon Corporation where he began a career in systems implementations progressing to assistant vice president in Treasury Management. His research centers on mobile technology, communications and security; leadership; and interdisciplinary education.

Dr. Karen Chinander Dye is a Senior Instructor in the Information Technology and Operations Management Department at FAU. She received her PhD from the University of Pennsylvania's Wharton School. Her teaching and research interests include operations and Business Analytics, behavioral decision making, risk analysis, environmental management, and the circular economy. She is the recipient of a number of teaching awards, including two FAU *Excellence in Undergraduate Teaching Awards*. She currently serves as an Associate Editor for the *Journal of Operations Management*, one of the top journals in the field, and recently was the Division Chair for the Operations and Business Analytics Division of the *Academy of Management*. Some of her scholarly articles have appeared in *Organization Science, Production and Operations Management, Organizational Behavior and Human Decision Processes,* and *Risk Analysis.* She is a member of the *Academy of Management*, the *Production and Operations Management Society*, and the *Institute for Supply Management*.

Mohsen Emadikhiav is an Assistant Professor in the Department of Information Technology and Operations Management at the FAU College of Business. He received his Ph.D. in Operations and Information Management from the School of Business at the University of Connecticut. Dr. Emadikhiav's research focuses on applications of Operations Research, Data Analytics and Machine Learning in business decision making. In his PhD dissertation research, he studied some of the problems related to trucking transportation that includes optimization for routing and scheduling, applications of spatial analytics methods on GPS data for collaborative trucking transportation and designing combinatorial auctions for trucking markets. Dr. Emadikhiav's current research also includes developing integrated optimization and machine learning methods to solve various business problems. At FAU, he teaches undergraduate courses in Operations Management.

Lawrence Feidelman is a full time Instructor in the Department of Information Technology and Operations Management (ITOM), College of Business, Florida Atlantic University, Boca Raton, Florida. He received his MS in Computer Information Science from the University of Pennsylvania. He has over forty years of computer consulting experience, having founded his own computer information research company and being the Vice President of a large

international information service company. His clients have included Fortune 1000 companies and US, Canadian and European governments He currently teaches computer security, web and social media site analytics and health information services, He has written numerous columns for computer newspapers and magazines and spoken before international conferences.

Dr. Stuart Diaz Galup is a business and information technology professor in the College of Business at Florida Atlantic University. Dr. Galup specializes in the management of information technology organizations and has published 2 books, 9 book chapters, edited 1 book of research articles on Information Technology Service Management, published 32 peer reviewed journal articles, and 23 academic conference proceedings. He was awarded a U.S. Patent for electronic processing of guardianships and has provided training and consulting for federal, state, and local government agencies and Fortune 1000 companies. Prior to joining FAU, he held senior information technology positions at Palm Beach County government, Broward Sheriff's Office and Miami Dade Police Department.

Dr. Jahyun Goo is an associate professor in the Department of Information Technology and Operations Management in the College of Business at Florida Atlantic University, where he teaches, researches, and consults on technology management subjects. He has received numerous awards and recognitions for excellence in teaching including the Stewart Distinguished Professorship, the Master Teacher, and the Dean's Teaching Fellow of FAU's College of Business. Besides significant pedagogical contributions to undergraduate, MBA, and Ph.D. teaching, he has also renowned for an excellent researcher. He has won the researcher of the year award in 2009, 2011, and 2017 at the Florida Atlantic University. His papers have been published in MIS Quarterly, Decision Sciences, Information & Management, Decision Support Systems, Information Systems Journal, and Information Systems Frontier, among others. Several pieces of his work were recognized as best or outstanding paper awards at prestigious journals and conferences. He has served for major journals as either an associate editor or a coordinating editor. Most recently, his research focuses on areas of IS sourcing, healthcare IT and analytics, information assurance, and IT and tourism. He received Ph.D. in MIS from the State University of New York at Buffalo.

Dr. Jim C. Han is a professor in the Department of Information Technology and Operations Management in the College of Business at Florida Atlantic. Dr. Han studies logistics systems and decision support systems, with most of his recent research focused on global Business Analytics. Several other research interests encompass management information systems, artificial intelligence, and discrete systems modeling. He teaches courses on operations management, probability and statistics, artificial intelligence, systems modeling, object-oriented design and programming, computer systems evaluation, and quantitative methods for business. He has generated more than one million dollars in sponsored research at FAU. He has successfully led projects sponsored by the National Science Foundation, Ford Motor Company, IBM, Motorola, General Motor, Florida Power and Light Company, Dole Fresh Fruit Company, National Forge Company, among others. Dr. Han was responsible for developing the curriculum for the Manufacturing Systems Engineering Master of Science program. He has created and taught more than eight graduate courses and 14 undergraduate courses at FAU. Dr. Han has been the advisor for many graduate students at FAU, having mentored more than thirty Ph.D. and M.S. candidates towards their dissertations and theses. He was also the primary coordinator in developing an Engineering Management program for the College of Engineering. Dr. Han has published over sixty research articles, appearing in some of the most prestigious journals in Systems Engineering related fields. These include the Annals of CIRP, Journal of Manufacturing Systems, International Journal of Production

Research, Transactions of the NAMRI, Journal of Manufacturing Technology Management, among others. Dr. Han received his Ph.D.in Industrial Engineering from Penn State.

Dr. Derrick Huang is currently an associate professor in the Department of Information Technology and Operations Management of College of Business at Florida Atlantic University, where he teaches, researches, and consults on technology management subjects. Prior to joining FAU in 2002, he held executive-level positions in the area of marketing and strategic planning at high-tech and telecommunications companies for ten years. Dr. Huang's research activities center on the business value and risk management of technology in organizations and, in particular, the link between the investment in information technology and the execution of business strategy. Most recently, his research focuses on the economics and management of information security investments and the strategic impact of information technology in healthcare. His work is published in leading technology management journals as well as by Harvard's Program on Information Resources Policy. At FAU, he teaches information technology management, web-based business development, and strategic consulting courses in the MBA programs, as well as the undergraduate business core MIS course. Dr. Huang received Ph.D. from Harvard University.

Dr. Inkyoung Hur is an assistant professor in Information Technology and Operations Management department in the College of Business at Florida Atlantic University. She received a Ph.D. in Business Administration with a concentration on MIS from Florida International University and a master in Industrial Engineering from Purdue University. Her research focuses on mobile information security, social media, patient engagement, software development, business analytics, and data visualization. Her publications have appeared in ten refereed journals, including European Journal of Information Systems, Decision Support Systems, Journal of Economic Behavior & Organization, and International Journal of Human-Computer Interaction. She currently teaches Introduction to Cybersecurity and Business Data Communication courses. She had taught courses of Business Analytics and Business Intelligence, Database Management, Data Analytics with Excel before joining FAU. She also worked for Nova Southeastern University as an assistant professor and Samsung as a data analyst.

Dr. Amir Javadinia is an assistant professor in the Department of Marketing in the College of Business at Florida Atlantic University. He received his PhD in Business Administration (with a Marketing major) from the Darla Moore School of Business at University of South Carolina. His primary research interests include empirical modeling in marketing strategy areas such as product recalls, corporate social responsibility, new products, market entry/exit, product eliminations and crowdfunding. Amir has two publications in International Journal of Advanced Research in IT and Engineering, and Australian Journal of Basic and Applied Sciences. He also has several papers under review in peer-reviewed journals including JM, JAMS, JBR, EJM, and QME. He teaches Marketing Strategy to undergraduate students and Marketing Analytics to graduate students.

Mircea Marandici is a full time Instructor in the Department of Information Technology and Operations Management (ITOM), College of Business, Florida Atlantic University, Boca Raton, Florida. He received his MS in Electrical Engineering from the Department of Computer and Electrical Engineering, Syracuse University, Syracuse, New York. He currently teaches introductory programming, web and mobile app development courses such as Social Media and Web Technologies and Mobile Apps for Business, and also Management Information Systems, Introduction to Business Analytics, and Artificial Intelligence for

Business, to undergraduate and graduate level students. In the corporate sector he has 32 years of experience working for IBM corporation in a variety of enterprise software development and managerial roles focused on business solutions in the manufacturing industry domain, using object oriented and web middleware technologies. He has 3 US software engineering patents. His current research interests are in mobile and web technologies, automation and Artificial Intelligence – societal, organizational and individual issues, labor impacts and behavior models.

Dr. David Menachof is Associate Professor of Business Analytics and Operations Management at Florida Atlantic University. Previously, he was the Peter Thompson Chair in Port Logistics, based at the Logistics Institute at Hull University Business School. Prof. Menachof received his doctorate from the University of Tennessee, and was the recipient of the Council of Logistics Management's Doctoral Dissertation Award in 1993. Prof. Menachof is a Fulbright Scholar, having spent a year in Odessa, Ukraine, and was on the designated list of Fulbright Scholars for Global Logistics. Prof. Menachof's work has been published and presented in journals and conferences around the world. A practiced and well received speaker, David has spoken at many important events such as the APEC STAR IV conference in Lima, Peru, where he delivered the keynote address. His research interests include Business Analytics security, sustainable Business Analytics, liner shipping, and financial techniques related to logistics and Business Analytics.

Dr. Magno Queiroz is Assistant Professor in the Department of Information Technology and Operations Management in the College of Business at Florida Atlantic University. Dr. Queiroz received his PhD from University of Wollongong, Australia. Prior to joining Florida Atlantic University, he has held faculty positions at Utah State University and at the University of Technology Sydney. His primary research interests include IT/business alignment, data sharing in multi-business organizations, and organizational agility. Dr. Queiroz's research has been published in top-tier journals including Journal of the Association for Information Systems, European Journal of Information Systems, Journal of Information Technology, and Journal of Strategic Information Systems. In addition, he currently serves as Guest Editor for the European Journal of Information Systems special issue on digital-enabled strategic agility. He teaches courses on data analysis and the strategic management of IT to graduate students.

Dr. Mary M. Schindlbeck is a Senior Instructor in the Information Technology and Operations Management Department in Florida Atlantic University's College of Business. In her 30 years at FAU, she has taught a variety of undergraduate and graduate level courses including Quantitative Methods in Administration, Data Mining & Predictive Analytics, Management of Information Systems and Information Systems Fundamentals. Her research interests include quantitative literacy, instructional design, cognitive load theory with an aim toward advancing the design of learning environments, and evaluation strategies and assessment. Dr. Schindlbeck has presented at several Teaching with Technology Showcases and was a recipient of an Excellence in Undergraduate Teaching Award from the College of Business.

Dr. Bharti Sharma is a full time Instructor in the Department of Information Technology and Operations Management (ITOM), College of Business, Florida Atlantic University, Boca Raton, Florida. She received her PhD in Electrical Engineering from Department of Computer and Electrical Engineering and Computer Science, College of Engineering, Florida Atlantic University, Boca Raton, Florida. She currently teaches business analytics courses such as Social Media Web Analytics, Data Mining, Database Management and others to

graduate level students. She also has almost 2 years of postdoctoral experience in the Biomedical Engineering department of the University of Miami. In the corporate sector she has 12 years of experience working for Florida Power & Light company as a programmer, business analyst and segregation of duties analyst. She has published in journals related to the field of engineering and analytics. Her current research interests are in business analytics - descriptive and predictive analytics.

Dr. Jonathan Sweet is a full-time instructor and program director for the Information Technology and Operations Management Department in FAU's College of Business. He has been teaching at FAU since 2014. He earned both his MBA in Operations Management and his Ph.D. in Higher Education Leadership from FAU. He has taught a variety of business courses including Information Systems Fundamentals, Quantitative Methods in Administration, Operations Management, & Project Management. His research interests include student success in business courses, academic self-concept in undergraduate students, and student course engagement in distance learning courses. He has presented his research at several conferences including the Online Learning Consortium, the International Society for Teaching & Learning, and the Teaching with Technology Showcase. In addition to teaching, he is very proud to have served as faculty advisor for the student organization, Management Information Systems Association, since 2016, where he mentors undergraduate business students and helps them connect with alumni and find employment with local IT companies.

Dr. Chul Woo Yoo is an Associate professor in the Department of Information Technology and Operations Management in the College of Business at Florida Atlantic University. He holds a PhD degree in MIS from the State University of New York at Buffalo. His research interests include cybersecurity, human factors in e-business, electronic word-of-mouth, information privacy, software piracy, smart tourism, healthcare and IT, and agricultural information system. His works have been published in Decision Support Systems, Information & Management, Information Development, Information Systems Frontier, Management Information Systems Quarterly, Technological Forecasting & Social Change, and the proceedings of the International Conference on Information Systems. Dr. Yoo has served as an associate editor of Information Systems Frontier and International Conference on Information Systems. He has also served as a mini-track co-chair of Americas Conference on Information Systems.

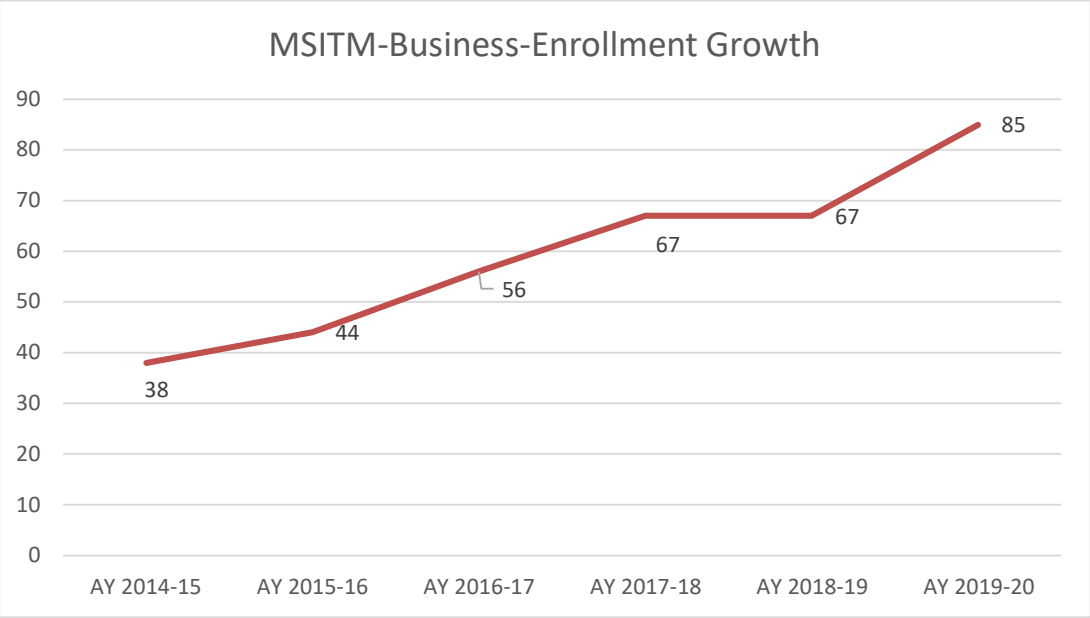
D. Provide evidence that the academic unit(s) associated with this new degree have been productive in teaching, research, and service. Such evidence may include trends over time for average course load, FTE productivity, student HC in major or service courses, degrees granted, external funding attracted, as well as qualitative indicators of excellence.

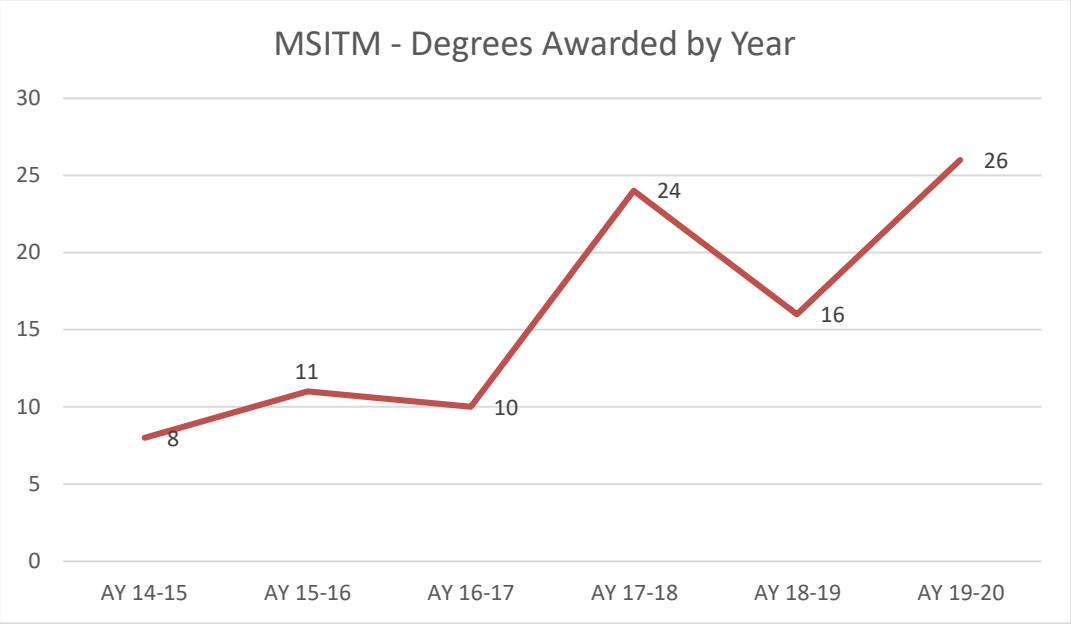
The enrollments (currently 85) and degrees awarded of the MSITM-Business graduate program offered by the **ITOM department** have seen substantial growth. The MSITM program has now seen one of the fastest enrollment growths in the College: 128% increase in enrollments since 2013. In Fall 2013 we launched the Accelerated Combined 5-year BBA-MSITM program. The accelerated program is now the preferred way of the MIS students to enter the graduate MSITM program.

Fulltime Equivalent (FTE) is a measure of instructional activity based on the number of student credit hours (SCH). Annualized FTE is based on the standard national definition and calculated as the undergraduate & graduated SCH divide by 30 and 24, respectively. The tables below provide the FTE and SCH for the graduate MSITM program.

The figures below give the enrollment and degree awarded data since 2014. Accordingly, individual graduate course loads have grown from 10 enrollments on average to 20 on average. ITOM provides the majority of the instruction of core business courses required for all business majors. ITOM produces 15.5% of the College's total Graduate I Annualized State-Fundable FTEs. It is the third largest Graduate I FTE producer in the College.

Since the inception of its MSITM program, the department has been tracking placement of its MSITM graduates and is proud to report that for 6th year in a row, the graduates achieve 100% placement within the first year after graduation which is a unique achievement in the college.





	Grad Level 1 (Masters)				Grad Level 2 (PhD)				
	State Fundable SCH	Non-State Fundable SCH	State Fundable FTE	Non-State Fundable FTE		State Fundable SCH	Non-State Fundable SCH	State Fundable FTE	Non-State Fundable FTE
2014-15	1734	1122	72	46.75	2014-15	24	0	1	0
2015-16	1278	1359	53	56.63	2015-16	24	0	1	0
2016-17	1572	2022	66	84.25	2016-17	51	0	2	0
2017-18	1728	2202	72	91.75	2017-18	54	0	2	0
2018-19	1770	2451	74	102.13	2018-19	30	0	1	0
2019-20	1995	2739	83	114.13	2019-20	39	75	2	3.13

The ITOM Department has 335 undergraduate Management Information Systems Majors (MIS). This constitutes 44% enrollment growth for the MIS majors since 2013. Thus, ITOM has successfully and consistently reversed the critically low MIS enrollments during 2006-2012. ITOM's MIS program has increased the FTE by 30% (from 772.35 to 1001.26) and the SCH by 28%.

All ITOM programs, BBA/BS in MIS and MSITM, are accredited by the AACSB and Southern Association of Colleges and Schools (SACS).

In the AY 2019-20, the ITOM Department faculty have published 2 books, 27 peer reviewed publications, 14 conference presentations.

X. Non-Faculty Resources

A. Describe library resources currently available to implement and/or sustain the proposed program through Year 5. Provide the total number of volumes and serials available in this discipline and related fields. List major journals that are available to the university's students. Include a signed statement from the Library Director that this subsection and subsection B have been reviewed and approved.

All FAU campuses have onsite libraries, with extensive physical and electronic collections. The Libraries' collection comprises more than 1.3 million volumes, as well as comprehensive collections of U.S. and Florida government documents, maps, curriculum materials, DVDs, videos, CDs and other materials. The Libraries also house many distinctive collections including artist's books, sound recordings, print music, rare books and manuscripts, and University Archives. The electronic resources collection includes nearly 200,000 electronic journals, 1 million electronic books, and over 600 databases. Databases are accessible through the Libraries' home page.

Appendix E provides library resources and a list of journal titles through aggregator Business Analytics and a list of aggregator databases such as ABI/INFORM, ProQuest or Academic Search Premier. The total number of major journals that are available to the university's students in the Business Analytics field is 5, 864, as well as 100 related Databases.

B. Describe additional library resources that are needed to implement and/or sustain the program through Year 5. Include projected costs of additional library resources in Table 2 in Appendix A. Please include the signature of the Library Director in Appendix B.

No additional resources are needed. This type of research has been done under other degree

programs for many years at FAU, so the needed materials are already in place.

C. Describe classroom, teaching laboratory, research laboratory, office, and other types of space that are necessary and currently available to implement the proposed program through Year 5.

The existing space at each of the sites participating in the program is sufficient to meet the needs of both teaching and research opportunities.

Classroom and teaching laboratory space are located in the Fleming Hall and Business BU building, with state-of-the-art Trading Room and Lecture Capture rooms permitting distance learning between FAU campuses from some classrooms. No additional teaching space is required to implement the proposed MSBA degree program or to sustain it through year 5.

D. Describe additional classroom, teaching laboratory, research laboratory, office, and other space needed to implement and/or maintain the proposed program through Year 5. Include any projected Instruction and Research (I&R) costs of additional space in Table 2 in Appendix A. Do not include costs for new construction because that information should be provided in response to X (E) below.

No additional classrooms, teaching or research laboratory, office, and other space will be needed to implement and/or maintain the proposed program through Year 5

E. If a new capital expenditure for instructional or research space is required, indicate where this item appears on the university's fixed capital outlay priority list. Table 2 in Appendix A includes only Instruction and Research (I&R) costs. If non-I&R costs, such as indirect costs affecting libraries and student services, are expected to increase as a result of the program, describe and estimate those expenses in narrative form below. It is expected that high enrollment programs in particular would necessitate increased costs in non-I&R activities.

No new capital expenditure for instructional or research space is needed or required in years 1-5 or beyond. We do not expect increased costs (such as non-I&R costs, indirect costs affecting libraries and student services), as a result of the program

F. Describe specialized equipment that is currently available to implement the proposed program through Year 5. Focus primarily on instructional and research requirements.

There are no needs for specialized equipment or any additional equipment. All the courses that exist have considered the impact of additional students and the assessment is that the current equipment and instructional resources will be sufficient to implement the program through year 5. ITOM uses state of the art computer labs equipped with a lot of specialized software for Business Analytics, such as XL Miner, Tableau, PowerBI, SAS Business Artificial Intelligence Platform, IBM Watson Studio and IBM Cloud, Google Analytics, Oracle Database Studio 12c, MySQL, MongoDB, SPSS Data Miner, Rapid Miner, WireShark, Netstat, Tracert, Microsoft Visio, Microsoft Project, SIMUL8, as well as development environments such as Eclipse, Brackets, NetBeans for Python, JavaScript, Java projects, etc. ITOM constantly updates its tools and software, and this is accounted for in the ITOM budget.

G. Describe additional specialized equipment that will be needed to implement and/or sustain the proposed program through Year 5. Include projected costs of additional equipment in Table 2 in Appendix A.

No additional specialized equipment is needed, as the program and its promotion is modeled on existing graduate degree programs in the ITOM Department.

H. Describe any additional special categories of resources needed to implement the program through Year 5 (access to proprietary research facilities, specialized services, extended travel, etc.). Include projected costs of special resources in Table 2 in Appendix A.

Given the large diversity of existing facilities, courses and teaching labs, College of Business, in particular the ITOM Department, we do not anticipate any need for additional resources. We will use available resources, including facilities and services, to ensure the success of the MSBA program. There are no additional requests for this new program.

I. Describe fellowships, scholarships, and graduate assistantships to be allocated to the proposed program through Year 5. Include the projected costs in Table 2 in Appendix A.

We will offer one Graduate Teaching Assistant position in years 1, 2, and 3, and two Graduate Teaching Assistant (GTA) positions in year 4 and 5. GTAs will support UG business and major core courses. No additional funds are requested as the funds for GTAs will come from reallocated resources. ITOM will pursue fellowships and scholarships opportunities with our industry friends, ITOM advisory board, and other local employers.

J. Describe currently available sites for internship and practicum experiences, if appropriate to the program. Describe plans to seek additional sites in Years 1 through 5.

ITOM has a very active internship program. Through its Advisory Board and active engagement with local companies, we provide one of the highest number of internships to our graduate and undergraduate students. For example, during Summer 2019, ITOM placed 38 interns in various companies, a record number for the last 10 years. All of these are related to the existing MSITM degree and will easily crossover to attract MSBA degree students as our partners indicate interest in the graduates of this proposed program. Our regular industry partners include NCCI, JM Family, Citrix, Goldman Sachs, American Express, Nexis and Lexis, Florida Crystals, Rocket Matter, Imperx, Office Depot, and many others. The department plans to seek addition sites via joint collaboration and hold local conferences such FAU-eCOTs Florida Southern Regional Conference (http://math.fau.edu/qian/2018Program.pdf) and the Inaugural Big Data Conference (http://www.math.fau.edu/big_data_science/) to attract more local industry partners.

Appendices – Table of Contents

APPENDIX A

TABLE 1-A (DRAFT)
PROJECTED HEADCOUNT FROM POTENTIAL SOURCES
(Baccalaureate Degree Program)

Source of Students (Non-duplicated headcount in any given year)*	Year 1		Year 2		Year 3		Year 4		Year 5	
	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE
Upper-level students who are transferring from other majors within the university**	0	0	0	0	0	0	0	0	0	0
Students who initially entered the university as FTIC students and who are progressing from the lower to the upper level***	0	0	0	0	0	0	0	0	0	0
Florida College System transfers to the upper level***	0	0	0	0	0	0	0	0	0	0
Transfers to the upper level from other Florida colleges and universities***	0	0	0	0	0	0	0	0	0	0
Transfers from out of state colleges and universities***	0	0	0	0	0	0	0	0	0	0
Other (Explain)***	0	0	0	0	0	0	0	0	0	0
Totals	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

* List projected annual headcount of students enrolled in the degree program. List projected yearly cumulative ENROLLMENTS instead of admissions.
** If numbers appear in this category, they should go DOWN in later years.
*** Do not include individuals counted in any PRIOR CATEGORY in a given COLUMN.

APPENDIX A

TABLE 1-B

PROJECTED HEADCOUNT FROM POTENTIAL SOURCES

(Graduate Degree Program)

Source of Students (Non-duplicated headcount in any given year)*	Year 1		Year 2		Year 3		Year 4		Year 5	
	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE
Individuals drawn from agencies/industries in your service area (e.g., older returning students)	8	7	12	10	14	11	17	14	22	18
Students who transfer from other graduate programs within the university**	2	2	1	1	0	0	0	0	0	0
Individuals who have recently graduated from preceding degree programs at this university	7	6	10	8	14	11	17	14	22	18
Individuals who graduated from preceding degree programs at other Florida public universities	1	1	2	2	3	3	3	3	3	3
Individuals who graduated from preceding degree programs at non-public Florida institutions	2	2	2	2	3	3	4	3	4	3
Additional in-state residents***	0	0	2	2	2	2	3	3	3	3
Additional out-of-state residents***	0	0	1	1	2	2	3	3	3	3
Additional foreign residents***	0	0	0	0	2	2	3	3	3	3
Other (Explain)***	0	0	0	0	0	0	0	0	0	0
Totals	**20**	**18**	**30**	**26**	**40**	**34**	**50**	**43**	**60**	**51**

* List projected annual headcount of students enrolled in the degree program. List projected yearly cumulative ENROLLMENTS instead of admissions.

** If numbers appear in this category, they should go DOWN in later years.

*** Do not include individuals counted in any PRIOR category in a given COLUMN.

APPENDIX A

TABLE 2

PROJECTED COSTS AND FUNDING SOURCES

Instruction & Research Costs (non-cumulative)	Year 1 Funding Source								Year 5 Funding Source						
	Reallocated Base* (E&G)	Enrollment Growth (E&G)	New Recurring (E&G)	New Non-Recurring (E&G)	Contracts & Grants (C&G)	Philanthropy Endowments	Enterprise Auxiliary Funds	**Subtotal coulumns 1+…+7**	Continuing Base** (E&G)	New Enrollment Growth (E&G)	Other*** (E&G)	Contracts & Grants (C&G)	Philanthropy Endowments	Enterprise Auxiliary Funds	**Subtotal coulumns 9+…+ 14**
Columns	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Faculty Salaries and Benefits	85,175	0	0	0	0	0	0	**$85,175**	104,139	0	0	0	0	0	**$104,139**
A & P Salaries and Benefits	1,204	0	0	0	0	0	0	**$1,204**	1,204	0	0	0	0	0	**$1,204**
USPS Salaries and Benefits	3,325	0	0	0	0	0	0	**$3,325**	6,650	0	0	0	0	0	**$6,650**
Other Personal Services	0	0	0	0	0	0	0	**$0**	0	0	0	0	0	0	**$0**
Assistantships & Fellowships	18,000	0	0	0	0	0	0	**$18,000**	36,000	0	0	0	0	0	**$36,000**
Library	0	0	0	0	0	0	0	**$0**	0	0	0	0	0	0	**$0**
Expenses	3,000	0	0	0	0	0	0	**$3,000**	4,000	0	0	0	0	0	**$4,000**
Operating Capital Outlay	0	0	0	0	0	0	0	**$0**	0	0	0	0	0	0	**$0**
Special Categories	0	0	0	0	0	0	0	**$0**	0	0	0	0	0	0	**$0**
Total Costs	**$110,704**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$110,704**	**$151,993**	**$0**	**$0**	**$0**	**$0**	**$0**	**$151,993**

*Identify reallocation sources in Table 3.

**Includes recurring E&G funded costs ("reallocated base," "enrollment growth," and "new recurring") from Years 1-4 that continue into Year 5.

***Identify if non-recurring.

Faculty and Staff Summary

Total Positions	Year 1	Year 5
Faculty (person-years)	0.56	0.66
A & P (FTE)	0.01	0.01
USPS (FTE)	0.03	0.06

Calculated Cost per Student FTE

	Year 1	Year 5
Total E&G Funding	$110,704	$151,993
Annual Student FTE	18	51
E&G Cost per FTE	$6,150	$2,980

Table 2 Column Explanations

Reallocated Base* (E&G)	1	E&G funds that are already available in the university's budget and will be reallocated to support the new program. Please include these funds in the Table 3 – Anticipated reallocation of E&G funds and indicate their source.
Enrollment Growth (E&G)	2	Additional E&G funds allocated from the tuition and fees trust fund contingent on enrollment increases.

New Recurring (E&G)	3	Recurring funds appropriated by the Legislature to support implementation of the program.
New Non-Recurring (E&G)	4	Non-recurring funds appropriated by the Legislature to support implementation of the program. Please provide an explanation of the source of these funds in the budget section (section III. A.) of the proposal. These funds can include initial investments, such as infrastructure.
Contracts & Grants (C&G)	5	Contracts and grants funding available for the program.
Philanthropy Endowments	6	Funds provided through the foundation or other Direct Support Organizations (DSO) to support of the program.
Enterprise Auxiliary Funds	7	Use this column for continuing education or market rate programs and provide a rationale in section III.B. in support of the selected tuition model.
Subtotal coulumns 1+…+7	8	Subtotal of values included in columns 1 through 7.
Continuing Base** (E&G)	9	Includes the sum of columns 1, 2, and 3 over time.
New Enrollment Growth (E&G)	10	See explanation provided for column 2.
Other*** (E&G)	11	These are specific funds provided by the Legislature to support implementation of the program.
Contracts & Grants (C&G)	12	See explanation provided for column 5.
Philanthropy Endowments	13	See explanation provided for column 6.
Enterprise Auxiliary Funds	14	Use this column for continuing education or market rate programs and provide a rationale in section III.B. in support of the selected tuition model.
Subtotal coulumns 9+…+ 14	15	Subtotal of values included in columns 9 through 14.

APPENDIX A

TABLE 3
ANTICIPATED REALLOCATION OF EDUCATION & GENERAL FUNDS*

Program and/or E&G account from which current funds will be reallocated during Year 1	Base before reallocation	Amount to be reallocated	Base after reallocation
TAG000249 in Boca, TAG000483 in Davie - Department of Infromation technology and operations Management	$3,524,315	$110,704	**$3,413,611**
Totals	$3,524,315	$110,704	**$3,413,611**

*** If not reallocating funds, please submit a zeroed Table 3**

APPENDIX A

TABLE 4
ANTICIPATED FACULTY PARTICIPATION

Faculty Code	Faculty Name or "New Hire" Highest Degree Held Academic Discipline or Speciality	Rank	Contract Status	Initial Date for Participation in Program	Mos. Contract Year 1	FTE Year 1	% Effort for Prg. Year 1	PY Year 1	Mos. Contract Year 5	FTE Year 5	% Effort for Prg. Year 5	PY Year 5	Salary	Benefits	Salary + Benefits	PY Year 1 Budget	PY Year 5 Budget
A	Goo, Jahyun, Ph.D. Management Information Systems	Assoc. Prof.	Tenured	Fall 2021	9	0.75	0.06	0.05	9	0.75	0.13	0.10	144,946.48	43,483.94	188,430.42	8,832.68	18,371.97
A	Compomizzi, Joseph, Ph.D. Business Communications	Sen. Instr.	Non-Tenure earning	Fall 2021	9	0.75	0.06	0.05	9	0.75	0.06	0.05	60,300.32	18,090.10	78,390.41	3,674.55	3,674.55
A	Sharma, Bharti, Ph.D. Management Information Systems	Instr.	Non-Tenure earning	Fall 2021	9	0.75	0.13	0.09	9	0.75	0.13	0.09	74,284.56	22,285.37	96,569.93	9,053.43	9,053.43
A	Schindlbeck, Mary, Ph.D. Management Information Systems	Sen. Instr.	Non-Tenure earning	Fall 2021	9	0.75	0.06	0.05	9	0.75	0.06	0.05	93,602.86	28,080.86	121,683.72	5,703.92	5,703.92
A	Behara, Ravi, Ph.D. Operations Management	Professor	Tenured	Fall 2021	9	0.75	0.06	0.05	9	0.75	0.06	0.05	162,465.27	48,739.58	211,204.86	9,900.23	9,900.23
A	Huang, Derrick, Ph.D. Management Information Systems	Assoc. Prof.	Tenured	Fall 2021	9	0.75	0.06	0.05	9	0.75	0.13	0.10	143,205.62	42,961.69	186,167.31	8,726.59	18,151.31
A	Galup, Stuart, Ph.D. Management Information Systems	Assoc. Prof.	Tenured	Fall 2021	9	0.75	0.06	0.05	9	0.75	0.06	0.05	132,257.17	39,677.15	171,934.32	8,059.42	8,059.42
A	Magno Queiroz, Ph.D. Management Information Systems	Asst. Prof.	Tenure-Track	Fall 2021	9	0.75	0.06	0.05	9	0.75	0.06	0.05	135,000.00	40,500.00	175,500.00	8,226.56	8,226.56
A	Amir Javadinia Marketing	Asst. Prof.	Tenure-Track	Fall 2021	0	0.75	0.06	0.05	9	0.75	0.06	0.05	132,600.00	39,780.00	172,380.00	8,080.31	8,080.31
A	Baghersad, Milad, Ph.D. Supply Chain Management	Asst. Prof.	Tenure-Track	Fall 2021	9	0.75	0.13	0.09	9	0.75	0.13	0.09	122,400.00	36,720.00	159,120.00	14,917.50	14,917.50
	Total Person-Years (PY)							**0.56**				**0.66**				85,175.20	104,139.21

Faculty Code		Source of Funding	PY Workload by Budget Classsification Year 1		Year 5
A	Existing faculty on a regular line	Current Education & General Revenue	0.56		0.66
B	New faculty to be hired on a vacant line	Current Education & General Revenue	0.00		0.00
C	New faculty to be hired on a new line	New Education & General Revenue	0.00		0.00
D	Existing faculty hired on contracts/grants	Contracts/Grants	0.00		0.00
E	New faculty to be hired on contracts/grants	Contracts/Grants	0.00		0.00
		Overall Totals for	**Year 1** 0.56		**Year 5** 0.66

APPENDIX B

Please include the signature of the Equal Opportunity Officer and the Library Director.

Ruba Kanaan, Interim Executive Director, OEI 02/19/2021

Signature of Equal Opportunity Officer **Date**

Maris L. Hayashi 2/26/2021

Signature of Library Director **Date**

This appendix was created to facilitate the collection of signatures in support of the proposal. Signatures in this section illustrate that the Equal Opportunity Officer has reviewed section II.E of the proposal and the Library Director has reviewed sections X.A and X.B.

APPENDIX C

Data related to the need for another degree in the state

Bureau of Labor Statistics (BLS) data. According to the 2020 update by the Bureau of Labor Statistics (BLS) (2020), employment in business analytics-related occupations is projected to grow 5 percent from 2019 to 2029, faster than the average for all occupations, adding about 476,200 new jobs. "Globalization, a growing economy, and a complex tax and regulatory environment are expected to continue to lead to strong demand for accountants and auditors. In addition, increasing usage of data and market research in order to understand customers and product demand, and to evaluate marketing strategies, will lead to growing demand for market research analysts. Occupations with Business degrees with strong foundation in Business Analytics are Management analysts, Operations research analysts, Budget analysts, Market and Social Media Researchers, and others.

Hanover Market Research data. Hanover Market research reports that demand for Masters' level supply chain management professionals continues to grow in both the local and state market. These numbers at both the local and state level far exceed expected Masters' level graduates from all SUS programs combined. The figure**s** below show the South-East current and projected employment in Business Analytics-related occupations and top Business Analytics-related job titles (Hanover Research report).

Florida Department of Economic Opportunity (DEO) data. The Florida Department of Economic Opportunity (DEO) lists "Management analyst" as the top 23d occupation gaining the most new jobs, with projected 18% growth between 2020 and 2028. "Operations Research Analysts" is listed as the 27th fastest growing occupation with projected 25.8% growth in the same period. "Financial analyst" has projected growth of 10.5%. Other business analytics related occupations, such as marketing research analyst, digital media analyst, etc., have similar growth.

BOG CIP-SOC job growth and median salary data.
Projections Data Tool v3.1 SRS 2-4-21 has given detailed summary of the job and salary growth projection for positions under CIP 30.7102, from both BLS and Florida DEO. The Table below displays the results of the analysis.

Table: BOG-provided CIP-SOC job growth and median salary analysis using the Employment Projections Data Tool v3.1 SRS 2-4-21, CIP 30.7102

	NATIONAL DATA FROM BLS						
	Employment 2019	Employment 2029	Employment Change, 2019-29 Number	Employment Change, 2019-29 Percent	Percent self employed, 2019	Occupational openings, 2019-29 annual average	Median annual wage, 2019
Management Analysts	876,300	970,200	93,800	10.7	14.8	87,100	$ 85,260
Market Research Analysts	738,100	868,400	130,300	17.7	4.3	84,200	$ 63,790
Statisticians	42,700	57,500	14,800	34.6	2.5	4,900	$ 91,160
	FLORIDA DATA FROM DEO						
	FL Employment 2020	FL Employment 2028	FL Employment Change, 2020-28 Number	FL Employment Change, 2020-28 Percent	**FL Total Annual Average Job Openings**	**FL 2019 Median Annual Wage**	
Management Analysts	56,478	66,550	10,072	17.8	7,053	$ 67,246	
Market Research Analysts	36,908	46,131	9,223	25	5,396	$ 58,843	
Statisticians	684	937	253	37	94	$ 72,738	

There are numerous publications and reports in the media that point to the ever-increasing demand for business analytics professionals. McKinsey Global Institute (MGI) produced a report, indicating that many industries are in need of employees with business analytics skills. According to the report, "Leaders in every sector will have to grapple with the implications of big data, not just a few data-oriented managers…There will be a shortage of talent necessary for organizations to take advantage of big data. The United States alone could face 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." Economist reports on how banks are using big data in a variety of ways to combat fraud and sell more products to consumers. Other media articles point to the importance of business analytics in Sports Management and Hospitality.

The proposed FAU MSBA degree is designed to allow working professionals in the region to continue working full-time while they pursue their degree. The MSBA would be of immediate interest to employees and management of FPL, NextEra, and JM Family Enterprises, who have recently announced a partnership with the FAU College of Business to offer employees full tuition to attend courses.

Appendix D

Hanover Research - Market Analysis for MSBA

HANOVER RESEARCH

MARKET ANALYSIS

Master of Science in Business Analytics

Prepared for Florida Atlantic University

December 2020

In the following report, Hanover assesses demand for master's degree programs in business analytics, specifically highlighting demand trends within the Southeast region. This report includes an examination of student and labor market demand, and an analysis of potential competitor programs.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

RECOMMENDATIONS

Based on an analysis of degree completions, labor market demand, and market competitors, Hanover recommends that Florida Atlantic University (FAU):

Proceed with the development of a Master of Science in Business Analytics.

Student demand will likely continue to be strong for this offering in the foreseeable future, with both applications and relevant conferrals growing rapidly in recent years, particularly as students increasingly seek one-year graduate business education. Additionally, the labor market outlook for business analytics professionals is strong as well, though they may have to compete with professionals with other quantitative backgrounds (e.g., statistics, computer science, mathematics) for positions. Nevertheless, labor market projections indicate rapidly-growing employment volume in relevant occupations in coming years.

Incorporate the following features into the business analytics program:

- **STEM designation:** Ensuring that the program receives a STEM designation from the Department of Education will help FAU attract an international student audience. Five benchmarked programs have the STEM designation and heavily advertise this feature on their websites. Enrollment in a STEM program allows international students to receive an OPT extension that can extend their stay in the United States for two years.

- **Elective options:** In contrast to FAU's proposed 30-credit, 10-course offering, benchmarked programs require students to complete an average of 34 credits. Additionally, six of 10 programs allow students to take several electives. A couple of programs provide concentration options that students can complete with their elective credits. Alternatively, electives can allow students to complete specialized coursework in their career path of choice and can provide students with additional business acumen that will help them differentiate themselves from other professionals with quantitative backgrounds.

- **Hybrid format:** Only three benchmarked programs offer an online or hybrid format, with most programs offered in-person. On-campus programs can easily make use of industry connections, incorporating site visits and collaborative projects with local corporate partners. In addition, on-campus programs can help facilitate closer connections among students, with several programs explicitly using a cohort model to foster the networking opportunities that are an important part of business programs. As a result, while distance education elements can help FAU stand out in the competitive landscape, it may want to consider a flexible, hybrid delivery option rather than a fully-online option.

EXECUTIVE SUMMARY

KEY FINDINGS

Student demand and labor market outlook for business analytics programs is strong. Student demand for business analytics-related programs has increased rapidly in recent years, driven in part by increasing interest in one-year graduate business programs. A significant population of business analytics students are early career professionals, though programs can also attract mid-career professionals interested in career advancement seeking to take advantage of the increased emphasis on data-driven business decision making.

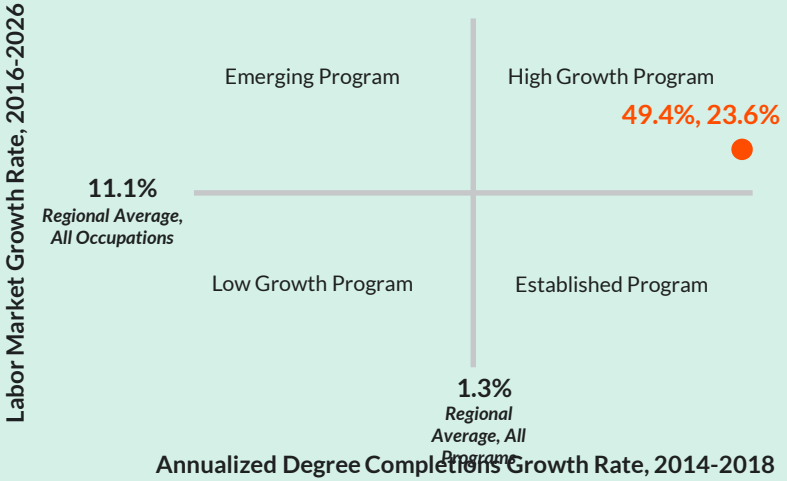
Similarly, employers seek business analytics professionals who can help them interpret, manage, and analyze the growing variety of data that is available. Business analytics professionals with a well-rounded education may also have an advantage over those with a purely quantitative background, as employers look for individuals with detailed knowledge of business principles who can assist with decision making.

Most programs are delivered in an on-campus format but may include innovative delivery elements or program structures. Jacksonville University offers each class session in both an in-person, online, and recorded format, allowing students to switch between delivery modes. A few programs replace the traditional semester schedule with a module format, in which courses take place over seven to eight weeks. Several programs also indicate that students can complete their degree requirements in 10 months, the shortest program duration available.

Nearly every program requires students to complete a capstone project; several rely on industry connections to attract students. Programs market the "real-world" experiences that practicum experiences provide, with industry partners providing teams of students with a business challenge to solve over the course of a semester. Industry partners may also provide internship opportunities or participate in speaker series on campus.

SOUTHEAST BENCHMARK ANALYSIS

Comparison of business analytics completions and relevant labor market to all completions and all occupations in the region



FAST FACTS

768 Number of business analytics-related master's conferrals in the Southeast region in 2018.

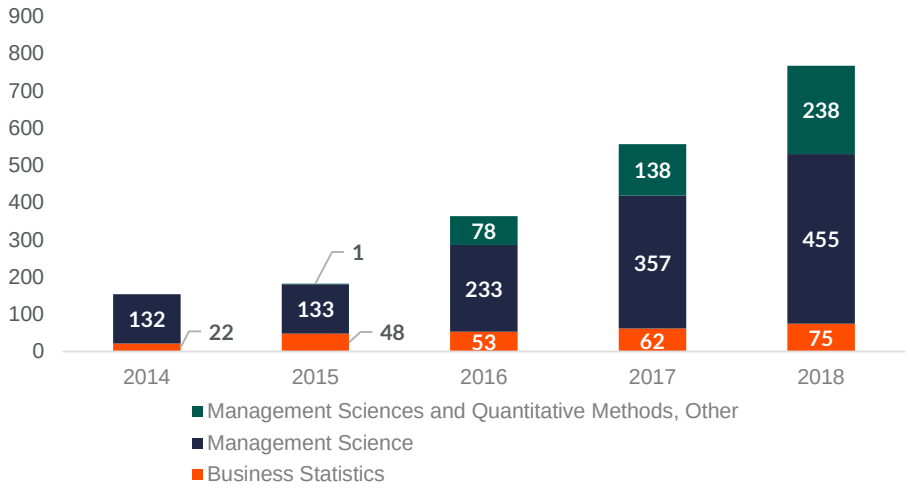
34 Average number of required credits among benchmarked programs.

3 Number of benchmarked programs (out of 10) that offer an online or hybrid format.

STUDENT DEMAND ANALYSIS

SOUTHEAST DEGREE COMPLETIONS

Regional distribution of degree completions from 2014 to 2018



TOTAL DEGREE COMPLETIONS

Aggregate degree completions by geographic level (2018)

	Indiana	Southeast	National
Business Statistics	40	75	1,159
Management Science	15	455	4,730
Management Sciences and Quantitative Methods, Other	33	238	2,910
Total Completions, Observed Fields	**88**	**768**	**8,799**
Growth Rate, Observed Fields	**44.8%**	**49.4%**	**38.4%**
Growth Rate, All Fields	**0.5%**	**1.3%**	**2.1%**

Source: IPEDS
Note: In this report, the Southeast region includes the following states: AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV.

ANALYSIS

Student demand for business analytics-related degrees is strong at every geographic level.

Between 2014 and 2018, master's degree conferrals in business analytics-related fields grew at an annualized rate of 49.4 percent in the Southeast region, far surpassing the growth in conferrals across all master's programs. Such growth is similarly represented at all geographic levels, with conferrals growing at an annualized 44.8 percent and 38.4 percent in Indiana and the nation, respectively.

Business schools are experiencing growing interest from students interested in gaining analytical skills.

Between 2019 and 2020, 71 percent of data analytics programs operated by business schools reported an increase in applications. Similarly, prospective students interested in business education are increasingly considering one-year master's programs, with the share of students considering a data analytics master's program housed within a business school increasing from 7 percent in 2013 to 19 percent in 2018.

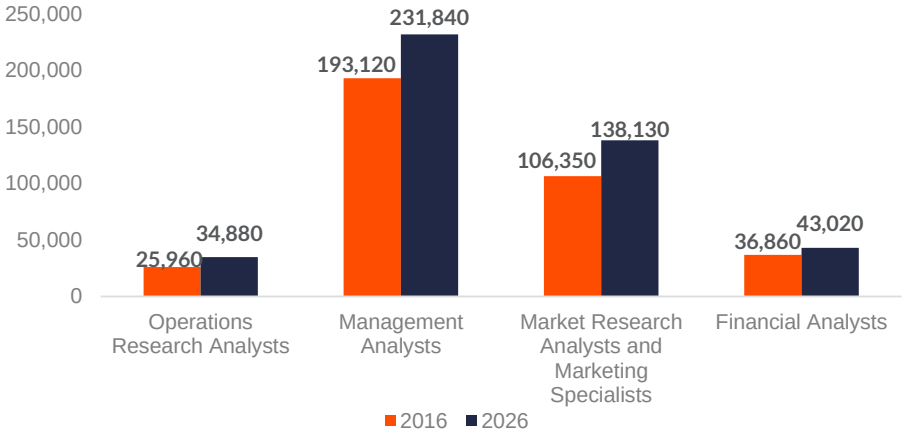
Business analytics programs are appealing to early-career professionals.

Overall, applicants to one-year master's programs in business do not tend to have significant work experience. In particular, a 2020 survey of business schools revealed that 30 percent of applicants to Master of Data Analytics programs did not have any work experience, while 57 percent only had between three to six years of experience. Nevertheless, business analytics programs may still appeal to some mid-career professionals who are seeking advancement in their own companies, particularly as data becomes increasingly accessible to organizations when making important business decisions.

LABOR MARKET ANALYSIS

SOUTHEAST CURRENT AND PROJECTED EMPLOYMENT

Regional-related positions as of 2016 and 2026 (projected)



TOTAL LABOR MARKET

Aggregate projected employment growth by geographic level

	Indiana	Southeast	National
Estimated Employment (2016)	99,370	362,290	1,997,400
Projected Employment (2026)	127,120	447,870	2,303,400
Employment Growth, Observed Occupations	**27.9%**	**23.6%**	**15.3%**
Total Annual Openings, Observed Occupations	**12,440**	**43,070**	**232,400**
Employment Growth, All Occupations	**15.7%**	**11.1%**	**5.2%**

Source: Projections Central
Note: Due to data update schedules, national data refer to the period 2018 to 2028.

ANALYSIS

The employment outlook for business analytics professionals is strong. Labor market projections suggest that employment in business analytics-related occupations should grow 23.6 percent in the Southeast region between 2016 and 2026, much faster than the aggregate 11.1 percent growth across all occupations. The outlook for management analysts is particularly strong, as employment is projected to increase 20.0 percent during this period, despite already-significant employment volume.

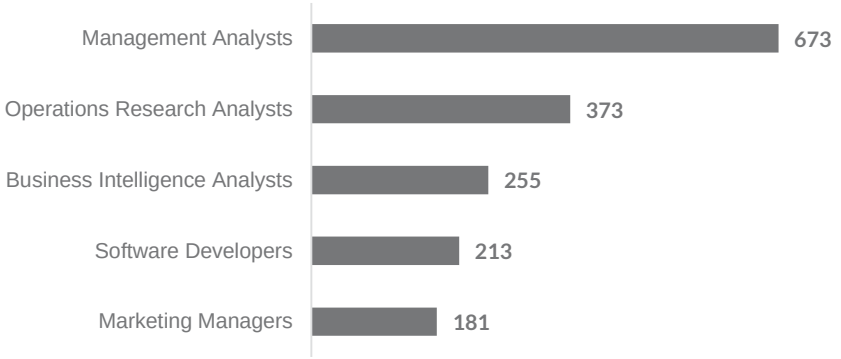
According to the Bureau of Labor Statistics (BLS), the increasing importance of "Big Data" will drive demand for business analytics-related occupations, translating to more employment opportunities in a variety of occupational fields. The BLS predicts that the rise of "big data" will increase the demand for financial analysts because it allows them "to access a wider range of data and conduct higher quality analysis." The use of big data will also have consequences for those employed as market research analysts. Specifically, businesses will need data-savvy market research analysts to help understand consumer needs and the efficacy of marketing strategies. And finally, the BLS forecasts that operations research analyst occupations will become more data focused, as companies see a need for workers who can "help them turn data into valuable information that managers can use."

Employers believe that demand for candidates with data science and analytics skills will far surpass the supply of trained graduates, suggesting unmet programming needs. According to a 2017 Business-Higher Education Forum study, 95 percent of employers say data science and analytics skills are "problematic to find." In particular, employers seek applicants who are well-rounded, with both analytical and social skills, and who are able to work in multidisciplinary contexts. Nevertheless, while business analytics professionals must be flexible, top industries of employment include technology, energy/utilities, and consulting.

REAL-TIME JOB POSTINGS INTELLIGENCE

TOP BUSINESS ANALYTICS-RELATED JOB TITLES

Regional positions by job title that include the key phrase "business analytics" in the job description.



EXEMPLARY SOUTHEAST JOB POSTINGS

Position	Employer	Location	Skills and Requirements
Lead Business Intelligence Engineer	Humana	Rogers, AR	▪ Master's degree in a quantitative field (e.g., statistics, business analytics, mathematics) ▪ 2+ years leading teams of data scientists
Business Analyst	PictSweet Farms	Bells, TN	▪ Master's degree in business analytics ▪ 2+ years in an operations or operations analyst role ▪ Lean Six Sigma training preferred
Director of Institutional Assessment, Research, and Effectiveness	Tennessee Technological University	Cookeville, TN	▪ Master's degree in educational research, computer science, business analytics, public administration, or related field ▪ Demonstrated proficiency in SAS, SQL, and other data analytical tools

Note: For this analysis, Hanover retrieved job postings data for business analytics-related positions in the Southeast region from JobsEQ, a proprietary database providing real-time job postings aggregated from thousands of websites. All data reflect the 180-day period as of November 2020.

ANALYSIS

Job opportunities are plentiful for business analytics professionals, though they may face competition from individuals with quantitative backgrounds. Over the previous six months, employers in the Southeast region posted 4,246 online job openings for positions related to business analytics. However, such positions welcome individuals with credentials in a variety of quantitative disciplines, including computer science, statistics, and mathematics. More senior managerial positions also welcome individuals with significant leadership experience and may also accept the MBA credential. As a result, business analytics programs should ensure that their curricula adequately help students differentiate themselves in the workforce, blending proficiency in necessary technical skills with business leadership acumen.

TOP CREDENTIALS AND SKILLS

Top Skills

- Microsoft Excel
- Structured Query Language (SQL)
- Tableau
- Statistics
- Python
- Microsoft PowerPoint
- Computer Programming/Coding
- Data Analysis
- Statistical Analysis System (SAS)

Top Certifications

- Certified Public Accountant (CPA)
- Project Management Professional (PMP)
- Secret Clearance
- Chartered Financial Analyst (CFA)
- Certified Information Systems Security Professional (CISSP)
- Certified Information Systems Auditor (CISA)
- Certified Financial Risk Manager

TOP SOUTHEAST EMPLOYERS

- NextEra Energy
- IBM
- Savage Services
- Risk & Business Analytics (RBA)
- Johnson & Johnson
- Deloitte
- Cerebra Consulting
- JCPenney
- USAA

COMPETITOR ANALYSIS

ANALYSIS

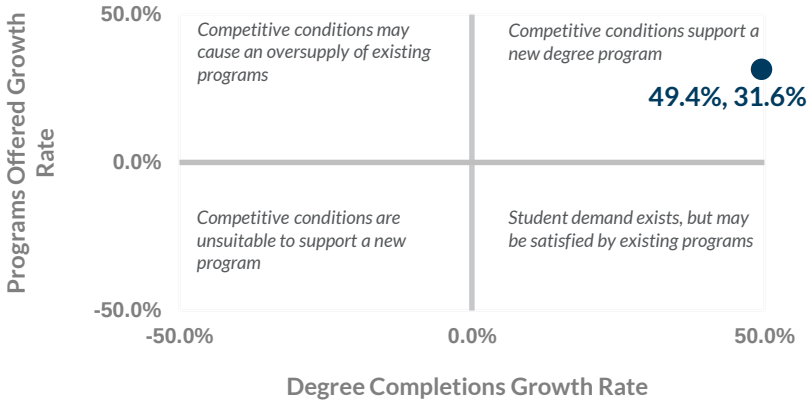
Market conditions in the Southeast region are favorable for an additional MS in Business Analytics program.

While the number of new master's programs in related fields has grown at an annualized rate of 31.6 percent between 2014 and 2018, regional growth in degree conferrals remains strong, growing at a rate of 49.4 percent during this period. Nevertheless, while student demand will likely remain strong, the growth in business analytics-related programs and institutional recognition of this promising field suggests that new programs should seek strategies for differentiation.

To provide a comprehensive analysis of the competitive landscape and opportunities for market growth, Hanover benchmarked master's programs in Florida and the region that offer degrees in business analytics. A full scan of all benchmarked programs can be found on pages 12 and 13.

SOUTHEAST MARKET SATURATION

Within the region, do competitive conditions support an additional business analytics program?



REGIONAL BENCHMARKED INSTITUTIONS

Institution	Location	Distance from FAU (in miles)
Florida State University	Tallahassee, FL	427
Jacksonville University	Jacksonville, FL	308
Tulane University	New Orleans, LA	823
University of Alabama	Tuscaloosa, AL	735
University of Miami	Coral Gables, FL	51.6

Institution	Location	Distance from FAU (in miles)
University of Tampa	Tampa, FL	228
University of Tennessee – Knoxville	Knoxville, TN	832
University of South Florida	Tampa, FL	225
University of Virginia	Charlottesville, VA	940
Wake Forest University	Winston-Salem, NC	770

PROGRAM TRENDS: SUMMARY

PROGRAM LENGTH

Most benchmarked business analytics programs report that students can complete the degree in approximately one year. Several programs report a slightly shorter time-to-completion of 10 months. Two programs advertise a program length of 1.5 years. Programs typically expect full-time enrollment.

CREDIT REQUIREMENTS

34

Benchmarked business analytics programs require students to complete an average of 34 credits. The University of Tennessee-Knoxville requires the most credits at 38, whereas the University of Virginia requires only 30 credits. Most programs include a practicum or internship among credit requirements.

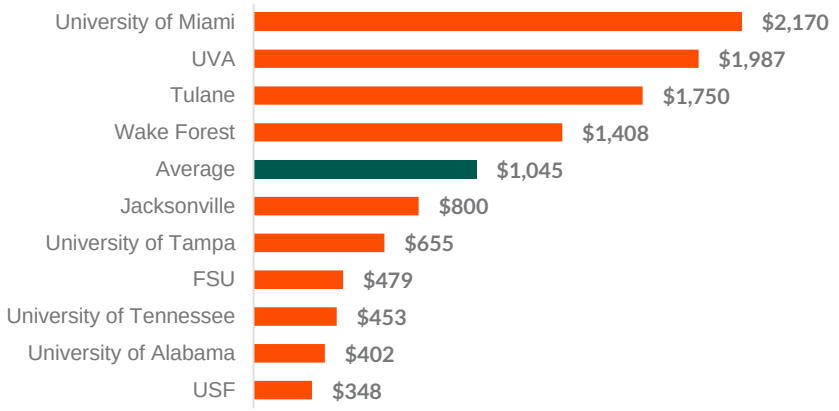
SPECIALIZATIONS

Three benchmarked business analytics programs allow students to select specialization options. Notably, specializations are optional at all three institutions, with students able to use their electives to fulfill specialization tracks. Available specializations include:

- Accounting and finance
- Energy
- Marketing and management
- Analytics and business intelligence
- Information assurance
- Consulting

(PER-CREDIT) TUITION

Tuition ranges from $2,170 per credit at the University of Miami to $348 per credit at the University of South Florida. If FAU develops a business analytics degree, a tuition rate around or lower than $1,045 per credit will be competitive on price.



Note: Lists in-state tuition when applicable.

DELIVERY FORMAT

3 of 10 benchmarked business analytics programs offer online or hybrid formats

8 of 10 benchmarked business analytics programs offer an on-campus format

PROGRAM TRENDS

NOTABLE PROGRAMS AND FEATURES

Several benchmarked programs include distinctive features differentiating them from competitors across areas such as curriculum, program structure, and program delivery.

CURRICULUM

Concentrations

Wake Forest University offers an optional concentration in consulting. Notably, the concentration takes place during the summer following the completion of the standard business analytics program for most students. Students in the concentration complete an additional 12 credits, including an additional, compressed practicum.

Executive Option

In addition to the primary program, the **University of South Florida** also offers a weekend executive option. The weekend option is designed for working professionals who are interested in career advancement to managerial positions. As such, this option includes a greater focus on leadership principles and incorporates "leadership development" in every course.

Dual Degree

Multiple programs allow students to complete a dual degree, combining the MS in Business Analytics with an additional master's credential. Available dual degree options include the MBA, MS in Organizational Leadership, or MS in Management.

PROGRAM STRUCTURE

Short Courses

At **Jacksonville University,** each course is only seven weeks in length, replacing the traditional semester structure. As a result, Jacksonville is also able to offer program start dates twice per semester.

Modules

At the **University of Virginia,** courses take place during five modules spread across the entire program, replacing the semester schedule. Modules appear to vary in length, with several modules lasting approximately 2.5 months and remaining modules lasting approximately five weeks.

Accelerated Option

Tulane University offers an accelerated, 10-month option and an 18-month option. Tulane indicates that both options expect full-time enrollment. However, the 18-month option incorporates an internship opportunity that students complete over the summer.

DELIVERY METHOD

Flexible Delivery

Jacksonville University offers flex classes, where class sessions take place in-person or online and are recorded as well. As a result, students can select between delivery modes for every class session, with Jacksonville stating that "every class it is your choice."

Hybrid

The **University of Virginia** offers a hybrid delivery model that combines two in-person residencies per module with online, synchronous lectures and asynchronous materials. In total, the program includes eight in-person residencies that take place during weekends at UVA's Rosslyn, Virginia location. The program also includes two, four-day residencies (Thursday through Sunday) at UVA's Charlottesville campus.

PROGRAM TRENDS

TARGET AUDIENCE

Benchmarked programs primarily target entry-level professionals or professionals seeking a career change.

Several programs specify that they primarily target recent college graduates. For example, the University of Alabama explicitly states that its program is designed for individuals with little to no full-time work experience. Nevertheless, most programs do accept professionals seeking to advance their careers who would benefit from being able to incorporate data into their decision making.

Notably, some programs do prefer individuals who come from a technical background and may require prerequisite coursework in quantitative fields. For example, Florida State University indicates that applicants should have "general knowledge of economics, finance, accounting, statistics, calculus and management principles." Notably, Wake Forest University offers a five-day summer programming bootcamp prior to the start of the program for students with little to no programming experience.

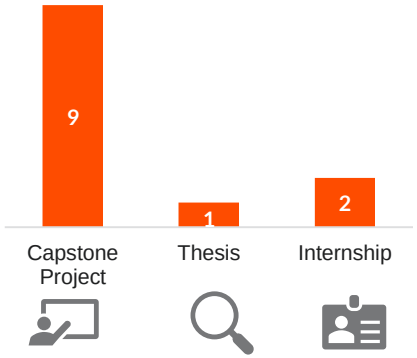
STEM DESIGNATION

Five benchmarked programs target international students by clearly marketing their STEM designation.

STEM-designated programs confer the advantage of allowing international students on student visas to receive an OPT extension. Typically, international students are permitted to remain in the United States for one year upon degree completion, with OPT extensions allowing students to stay an additional two years. Benchmarked programs with a STEM designation market this feature heavily on their home pages and are likely more successful at recruiting international students.

CULMINATING EXPERIENCES

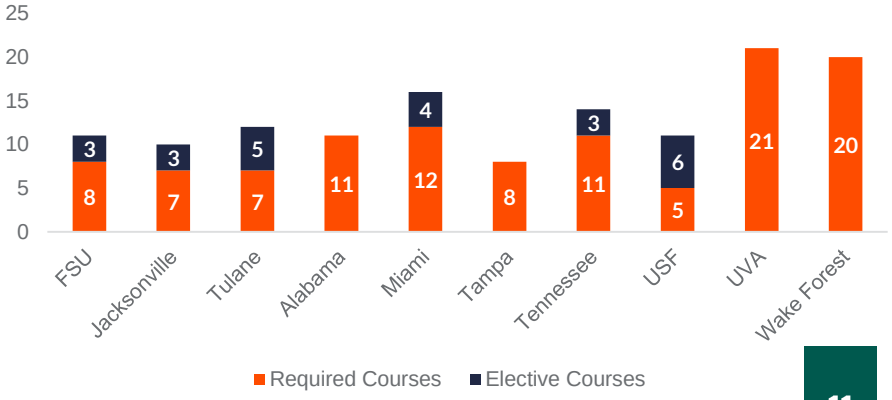
Nearly every program requires students to complete a capstone project, typically during their final semester. Some programs offer a thesis or internship option.



Many programs use the capstone project as an opportunity to show off their industry connections, allowing students to work with local corporate partners to use their learned analytical skills to solve a particular business problem. For example, Tulane University highlights the projects students have completed with the New Orleans Police Department and New Orleans Saints.

CORE VERSUS ELECTIVE COURSES

Just over half of benchmarked programs allow students to customize their degree via elective options. Note that some programs may appear to include a significant volume of courses simply due to the usage of half-credit courses or a short course, module-based structure.



PROGRAM BENCHMARKING

Hanover prioritized programs to benchmark based in Florida, in addition to a representative sample of programs located elsewhere in the region.

Institution	Program	Credits	Tuition (Per-Credit)	Delivery Mode	Program Structure	Target Audience	Notable Features
Florida State University *Tallahassee, FL*	Master of Science in Business Analytics	33 (11 courses – 8 core, 3 electives)	(Resident) $479.32 (Non-Resident) $1,110.72	On-Campus	One-year, full-time (three semesters)	Individuals seeking to meet the growing demand for business professionals who can transform raw data into valued analysis	▪ STEM-designated program ▪ Capstone project
Jacksonville University *Jacksonville, FL*	Master of Science in Applied Business Analytics	33 (11 courses – 7 core, 3 electives)	$800	On-Campus or Online	One-year, full-time (part-time option available); each class lasts 7 weeks	"People with a strong background in the technical areas of business, such as computer science, information technology, and engineering"	▪ All classes are recorded, allowing students to choose between delivery modes for every class session ▪ Capstone project ▪ Dual degree options with MBA or MSOL
Tulane University *New Orleans, LA*	Master of Business Analytics	36 (12 courses – 7 core, 5 electives)	$1,750	On-Campus	Accelerated 10-month option or 18-month option (with internship); Full-time	Recent grads and professionals looking to advance or change careers	▪ STEM-designated program ▪ Three specialization options (accounting and finance, energy, marketing and management) ▪ Integrated action learning with corporate partners, including presentations to industry experts in the fall and a semester-long project for a company in the spring ▪ Company site visits and sponsored projects
University of Alabama *Tuscaloosa, AL*	Master of Science in Business Analytics	36 (11 courses - 10 core courses and 1 6-credit seminar)	*(Resident) $401.94; (Non-Resident) $1,098.61	On-Campus	One year (three semesters)	Recent college graduates with limited or no full-time, post-graduate work experience	▪ Capstone case or project provided by an industry partner ▪ Cohort model
University of Miami *Coral Gables, FL*	Master of Science in Business Analytics	32 (16 2-credit courses – 12 core, 4 electives)	$2,170	On-Campus	10 months	"Individuals who understand statistics and computer programming. Most have backgrounds in the technical aspects of business—finance, management, engineering, health care, etc."	▪ Business analytics internship; can be replaced with capstone if student cannot find internship ▪ BSBA + MSBA accelerated 4.5-year option available ▪ Home to Deloitte Institute for Research & Practice in Analytics, which facilitates industry speaker series, internships, and capstones

Source: Institutional Websites (see embedded hyperlinks)
*Calculated based on provided per-semester tuition

PROGRAM BENCHMARKING

Hanover prioritized programs to benchmark based in Florida, in addition to a representative sample of programs located elsewhere in the region.

Institution	Program	Credits	Tuition (Per-Credit)	Delivery Mode	Program Structure	Target Audience	Notable Features
University of Tampa *Tampa, FL*	MS in Business Analytics	32 (8 4-credit core courses)	$655	Online (some courses may be available on-campus)	One year (three semesters)	"Working professionals from a variety of fields, including technology, marketing, HR, finance, health care, cybersecurity, higher education, government and the military."	▪ Fall, spring, and summer start times
University of South Florida *Tampa, FL*	MS in Business Analytics & Information Systems	33 (11 classes – 5 core, 6 electives)	(Resident) $347.91 (Non-Resident) $772.43	Primarily on-campus with online elements	Full- and part-time options; Full-time students can finish in one year	"Highly qualified individuals with motivation for leadership in information technology fields." Typical applicants have 2-5 years of related work experience	• STEM-designated program • Optional concentrations in analytics and business intelligence or information assurance • Optional study abroad component in software engineering with Infosys in India • Graduate assistantships available • Option of master's thesis or practicum project • Also available as a weekend executive option
University of Virginia *Charlottesville, VA*	MS in Business Analytics	30 (21.5-2 credit core courses)	$1,986.67	Hybrid – combines two in-person residencies per module with online, synchronous lectures and asynchronous materials	One year – structured as five, integrated modules	Individuals new to analytics or who already work in the field	• Capstone project consisting of an analytics challenge from a sponsoring company
Wake Forest University *Winston-Salem, NC*	Master of Science in Business Analytics	37 (20 core courses – many take place only across half the semester)	$1,408.27	On-Campus	10 months– structured as five modules across three academic terms	College graduates who want to build a career in analytics	• STEM-designated program • Option for add-on, 12-credit concentration in consulting to be completed in the summer following the program • Practicum involving a project for a corporate partner • Five-day programming bootcamp for incoming students with little to no programming experience • MSM-MSBA sequential degree sequence for international students

Source: Institutional Websites (see embedded hyperlinks)
*Calculated based on provided per-semester tuition

HANOVER RESEARCH

CONTACT

Lisa Bogert, Ph.D.
Content Director
E: lbogert@hanoverresearch.com
P: 202.559.0050
hanoverresearch.com