ARIZONA STATE UNIVERSITY
PROPOSAL TO ESTABLISH A NEW GRADUATE DEGREE

DEGREE PROGRAM

College/School(s) offering this degree: W. P. Carey School of Business

Unit(s) within college/school responsible for program: W. P. Carey School of Business Dean's Office

If this is for an official joint degree program, list all units and colleges/schools that will be involved in offering the degree program and providing the necessary resources: NA

Proposed Degree Name: Master of Science in Business Analytics

Master's Degree Type: MS-Master of Science

Doctoral Degree Type: NA

If Degree Type is Other, provide proposed degree type: NA

and proposed abbreviation: NA

Proposed title of major: Business Analytics

Is a program fee required? Yes ☒   **No** ☐

Is the unit willing and able to implement the program if the fee is denied? Yes ☐   **No** ☐
(The academic unit would like to reconsider the degree if the fee is denied.)

Requested effective term and year: Fall 2013
(The first semester and year for which students may begin applying to the program.)

PROPOSAL CONTACT INFORMATION
(Person to contact regarding this proposal)

Name: Dr. Michael Goul and Dr. John Fowler   **Title:**   Professor/Chair and Professor/Chair

Phone: 965-5482 and 965-4330   **email:** michael.goul@asu.edu and john.fowler@asu.edu

DEAN APPROVAL

This proposal has been approved by all necessary unit and College/School levels of review, and the College/School(s) has the resources to offer this degree program. I recommend implementation of the proposed degree program. (*Note: An electronic signature, an email from the dean or dean's designee, or a PDF of the signed signature page is acceptable.*)

College Dean Name: Amy Hillman, Executive Dean

College Dean Signature ____ *Amy Hillman* _____ **Date:** __9/20/12__

College Dean name:
(If more than one college involved)

College Dean Signature _____ **Date:** _____

ARIZONA STATE UNIVERSITY
PROPOSAL TO ESTABLISH A NEW GRADUATE DEGREE

DEGREE PROGRAM INFORMATION

Master's: MS-Master of Science

Proposed title of major: Business Analytics

---

1. PURPOSE AND NATURE OF PROGRAM

A. Brief program description

The Information Systems and Supply Chain Management Departments propose a Master of Science in Business Analytics (MSBA) degree program that is nine months in duration and has 10, 3 credit hour courses – 4 and ½ courses to be taught by each Department and one course to be taught by another W. P. Carey Department with faculty who would like to participate by teaching in the applied statistics area. All units in the W. P. Carey School have faculty qualified to teach in the applied statistics area (for example, the Economics Department will participate by teaching an Applied Regression course in the first year offering of the program).

The MSBA addresses a predicted 50-60% gap by 2018 in the supply of talent capable of performing deep analytics to address business and government problems and opportunities. Four trends are fueling data growth and job demand: cloud computing, a shift in emphasis to interaction processing from transaction processing, the growth of mobile data, and significant improvements in quantitative modeling software. The Program will leverage the combined analytics expertise of faculty in W. P. Carey School Departments. Data visualization will be a key integrating research niche and a catalyst for a new MSBA Laboratory. Such a laboratory is envisioned to be virtual; analytics vendors contacted thus far provide cloud-based, on-demand, visualization portals. Analytic vendor support for a virtual lab is anticipated to mitigate the need for substantial ASU resource investments.

Students recruited for the initial MSBA program offerings will be: 1) Recent undergraduates of degree programs where quantitative skills are emphasized, and 2) Career advancers with sufficient quantitative background and the ability to commit to full time graduate study delivered during the day. It is anticipated that healthcare, public administration, mobile services, retail and manufacturing will be areas where analytics talent will initially provide significant near-term business value. After successful initial offerings, corporate, evening, and online offerings will be considered.

MSBA curriculum will be delivered using a variety of scheduling formats. Courses that require a longer span to cover content will be semester-long, and others will be consistent with the term system of delivery in other W. P. Carey Master's programs. The proposed curriculum is heavily oriented to applied analytics with deep dives into real datasets being a key differentiator from competitor's curriculum.

ASU programs in the Science, Technology, Engineering and Math (STEM) areas are targets for recruiting as are the W. P. Carey students who are soon to graduate in areas including supply chain management, information systems, marketing, finance, economics, etc. Financial projections show program viability in a first year (including Dean's Office recapture of the entire initial investment) at a single cohort enrollment of 45 students. Multi-cohort on-site, online and corporate platform versions of the MSBA are expected to follow based on the experiences gained from delivering a first year charter cohort. This will substantially increase the MSBA program's revenue generation.

A competitor analysis confirms a small but growing number of MSBA-like programs across the nation with total costs ranging from the $21k at North Carolina State to $40-45k for most programs and to $63.5k for a specialized Shanghai-based analytics program offered by NYU-Stern.
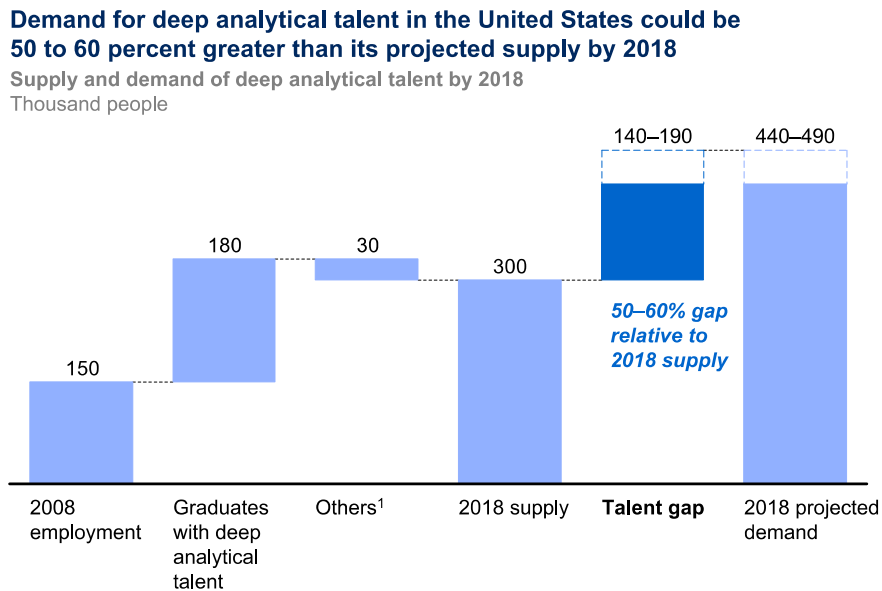
> **B. Total credit hours required for the program:** 30
> **C. Are any concentrations to be established under this degree program?** ☐ Yes ☒ No

2. PROGRAM NEED

Degree Rationale: The MSBA will meet a major need for new knowledge workers. In May of 2011, the McKinsey Global Institute predicted a debilitating shortage in the coming years of talent who possess depth in analytics.[1] Many similar reports have echoed the trend towards a need for organizational harvesting of knowledge from the vast amounts of data now being generated. Often called "big data," more and more structured and unstructured data is being collected and analyzed. McKinsey estimates an unanswered need for 140,000 to 190,000 workers with deep analytic skills, plus 1.5 million managers and business analysts who can put big data to use in supporting better organizational decision making, innovate new product and service solutions and improve and optimize business processes and performance. Figure 1 provides a pictorial gap analysis of projected demand for workers with deep analytic talent.

Figure 1: Analytics Talent Gap[1]

Demand for deep analytical talent in the United States could be 50 to 60 percent greater than its projected supply by 2018
Supply and demand of deep analytical talent by 2018
Thousand people

1 Other supply drivers include attrition (-), immigration (+), and reemploying previously unemployed deep analytical talent (+).
SOURCE: US Bureau of Labor Statistics; US Census; Dun & Bradstreet; company interviews; McKinsey Global Institute analysis

A Master's level program in business analytics affords entering students an opportunity to leverage previously honed quantitative skills and knowledge from an undergraduate program, and it expands on those skills while focusing on the core business domains where analytics can and have been proven to deliver the most organizational value. Four fundamental and sustainable shifts in computing are and will continue to fuel the data growth requiring an increasing need for skilled graduates of the MSBA program:

1. *Cloud computing* is changing the economics of computing; it is creating a fragmentation of data and it enables more economical storage and analysis of data. This economic change is encouraging increasing data collection and growth.
2. Organizations are shifting from transactional processing to "*interaction processing*" where people, their interactions with products, services and each other, are generating large volumes of new data. This trend will be exacerbated with the coming of the 'Internet of Things' where

---

[1] Manyika, J. et al., "Big data: The next frontier for innovation, competition and productivity." McKinsey Global Institute, 2011, 1-158.

wireless advancements and new business applications connect tangible objects in real-time to people, other objects and organizations in ways never possible before. The volume of data communicated to and from this expanded Internet will explode. Dale Evans of Cisco predicts that in 2020, there will be 50 million things connected to the Internet – 7 times the world's population.[2]

3. Computing is shifting to *mobile delivery*; computationally intensive applications are no longer confined to desktops. The result is that consumers can now define value for products and services whenever, however and wherever they want. The boundary-less, low friction transactions and interactions this makes possible are projected to increase data growth at a compounded cumulative annual growth rate as shown in Figure 2:

Figure 2: Mobile Data Growth[3]
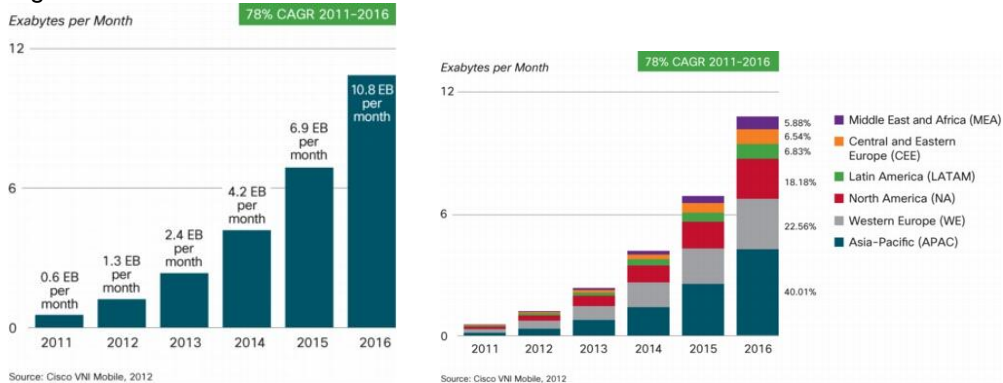
4. There have been significant improvements in a wide range of quantitative modeling software tools. These improvements include the ability to solve larger problem instances, reductions in the time to obtain solutions for difficult quantitative models, and improved interoperability between various quantitative modeling tools and support software.

3. IMPACT ON OTHER PROGRAMS

Minimal. The closest programs to this are the MBA with a specialization in Supply Chain Management and the MS in Information Management, but the unique trans-disciplinary nature of the degree will likely mean that it will have minimal impact on these degrees. In addition, the market for student placements is substantially different for MSBA graduates. For example, the expected experience level of entering students is much lower for the MSBA program than for the other three degree programs.

4. PROJECTED ENROLLMENT

We anticipate enrolling 45 students into the program the first two years and reaching two modest sized cohorts (40 each) by Year 4.

5-YEAR PROJECTED ANNUAL ENROLLMENT					
	1st Year	**2nd Year** (Yr 1 continuing + new entering)	**3rd Year** (Yr 1 & 2 continuing + new entering)	**4th Year** (Yrs 1, 2, 3 continuing + new entering)	**5th Year** (Yrs 1, 2, 3, 4 continuing + new entering)
Number of Students Majoring (Headcount)	45	45	45	80	80

---

[2] Evans, D. "The Internet of Things: How the Next Evolution in the Internet is Changing Everything." Cisco Internet Business Solutions Group, April 2011, 1-11.

[3] Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2011-2016, 2/14/2012, 1-29.

5. STUDENT LEARNING OUTCOMES AND ASSESSMENT
   A. List the knowledge, competencies, and skills students should have when they graduate from the proposed degree program.

Program Foundations: The W. P. Carey School MSBA will provide depth in analytics skills and knowledge, and it will combine that depth with concrete experience in applied business areas. The W. P. Carey School houses the Number 5 and Number 13 US News and World Reports ranked graduate programs in supply chain management and information management, respectively. The units are strong in quantitative modeling and analysis, applied statistics and performance measurement. In addition, both units have a focus on cross-functional business processes, project management and information sharing. The Information Systems unit brings strength in data warehousing, gathering, storing and accessing data, and data mining. The Supply Chain Management unit brings strength in statistical process control, optimization modeling and methods, simulation, and supply chain analytics applications. Both units note that visualization is an area of common future interest – and therefore seek to make visualization a cornerstone of a synergistic analytics research agenda that will be supported by a proposed new Visualization Lab.

Program Focus: The primary purpose of the initial program offerings will be to advance the careers of recent undergraduates of programs where their acquired quantitative skills and knowledge can be enhanced and applied in significant business domains. In addition, career advancers who can commit to full-time study for one academic year will leverage the degree to adapt their already quantitative bent to an applied business domain where job growth is sustainable. Entering students will be expected to take the GMAT or GRE. Typical undergraduate majors are expected to include CIS, SCM, ECON, MKT, statistics, computer science and other types of science, engineering, technology and mathematics (STEM) degree areas. The program's courses will quickly level-set requisite quantitative expectations for all students. The early information systems courses will cover needed data management knowledge and skills; later courses will address data mining, predictive analytics and unstructured data analysis and visualization concepts, tools and methods. The early supply chain management courses will introduce students to decision models for supply management, integrated supply chain management issues and tools to aid decision making in these and other applied business areas. After successful initial offerings, corporate, evening, and online offerings will be considered.

   B. Describe the plan and methods to assess whether students have achieved the knowledge, competencies and skills identified in the Learning Outcomes.

As shown in the table below, evaluation of the Master of Science in Business Analytics learning goals and objectives is a process that is ongoing throughout the curriculum. The process provides useful feedback to the business faculty and the MSBA Program Co-Directors.

Educational Goals/Objectives	Outcome measure(s)	Assessment process	Frequency of assessment
Critical Thinking Skills	Student performance on exams, course projects, and presentations.	Grade review	Every course offering
Business Analytics Tools and Technologies	Student performance on exams, course projects, and presentations.	Grade review	Every course offering

Real-World Applications of Business Solutions	Student performance in the applied project course.	Grade review and instructor assessment	End of program

In addition, we feel it is equally important to assess/evaluate the program itself. As shown in the table below, evaluation of the Master of Science in Business Analytics program is a process that begins at the end of the first course and continues after graduation. Overall, the process will function effectively and provides useful feedback to the business faculty, MSBA Program Co-Directors, W. P. Carey Associate Dean for MBA Programs, and W. P. Carey Student Services Coordinator. A major strength of the process is that we will continue to obtain feedback from our alumni, via regular alumni surveys, long after graduation.

Educational Goals/Objectives	Outcome measure(s)	Assessment process	Frequency of assessment
Quality Curriculum	1. Student satisfaction with instruction 2. Student satisfaction with job placement 3. Consistency/uniformity across courses with respect to rigor and quality of course content	1. End of semester evaluations 2. Alumni survey 3. Curriculum review	1. Every course offering 2. Periodic 3. Periodic
Advising and Career Management	1. Student satisfaction with advising 2. Student satisfaction with job/graduate school placement 3. Customer satisfaction with graduates	1. Exit interview 2. Alumni survey 3. Recruiter survey	1. At graduation 2. Periodic 3. Periodic

6. ACCREDITATION OR LICENSING REQUIREMENTS (if applicable).

The W. P. Carey School programs are accredited by AACSB International - The Association to Advance Collegiate Schools of Business. As stated in the Accreditation Standards, "Any new business programs begun at the institution will have sufficient resources to satisfy accreditation standards and will result from strategic planning processes of the school and institution. AACSB should be informed whenever new business degree programs are begun. New business programs in the institution will be placed on the list of accredited programs of the institution until they have been reviewed." Our next accreditation visit will occur in AY 2013-14 at which time the new MS program will be established. At that time, the review team will evaluate the program to determine how the degree enhances our vision and mission of the W. P. Carey School of Business and Arizona State University. We believe that the program is consistent with the mission and vision of the school, and foresee no negative outcomes to accreditation of such a program.

7. FACULTY, STAFF AND RESOURCE REQUIREMENTS

A. Faculty

i. Current Faculty

The MSBA program will require the development of new courses to be offered in the W.P. Carey School of Business. According to US News and World Reports, the partners in this program are

the 5th ranked graduate program in Supply Chain Management and the 13th ranked graduate program in Management Information Systems. Faculty members from these programs will naturally and seamlessly be involved in the MSBA program. See the Table of Likely MSBA Faculty below for the names, rank, and highest degree earned for faculty likely to teach in the MSBA program.

ii.   New Faculty

Current W.P. Carey School of Business faculty should be adequate for this new degree. Each unit involved in delivering the degree will teach 4.5 course sections of 3 credit hours each per cohort. Since the program will be jointly offered, the extra teaching load will be less difficult to absorb than if one unit delivered the degree. In addition, the W. P. Carey School manages a portfolio of programs, and because some programs have slightly declined in enrollments, the reallocation of faculty can support covering the new course sections proposed for the MSBA degree.

TABLE OF LIKELY MSBA FACULTY			
Department	**First Name**	**Last Name**	**Highest Degree**
SCM	Reynold	Byers	PhD
	John	Fowler	PhD
	Mohan	Gopalakrishnan	PhD
	Srimathy	Mohan	PhD
	Michele	Pfund	PHD
MIS	Haluk	Demirkan	PhD
	Michael	Goul	PhD
	Uday	Kulkarni	PhD
	Robert	St. Louis	PhD
	Ajay	Vinze	PhD
ECN	Jeffrey	Wilson	PhD

iii.   Administration of the program

The Faculty Co-Directors of the M.S. in Business Analytics program will oversee its operation. Admissions will be handled by a committee of MIS and SCM faculty appointed by the Co-Directors. Course offerings and curriculum development and review will be handled by the Co-Directors and the Associate Dean for the W. P. Carey MBA Program. Career advising will be managed by the W.P. Carey School of Business, Graduate Career Management Center (CMC) in collaboration with the Business Career Center. Student services (i.e., matriculation, course registration, graduation coordination, approval of plans of study) will be managed by the W. P. Carey MBA program student services team.

B . Resource requirements to launch and sustain the program.

Current W.P. Carey School of Business staff and ASU facilities and resources should be adequate for this new degree.

8.   COURSES:
A. Course Prefix(es): Provide the following information for the proposed graduate program.
   i.   Will a new course prefix(es) be required for this degree program?
                    Yes ☐ No ☒
   ii.   If yes, complete the **Course Prefixes / Subjects Form** for each new prefix and submit it as part of this proposal submission.

B. **New Courses Required for Proposed Degree Program:** see below

The MSBA curriculum is lock-step, nine months in duration, and it is composed of 10 courses including one (1.5 credit hours) Applied Project course from each discipline that serves as the culminating experience. The two 1.5 credit hour Applied Project courses will provide for a single, seamless experience for students. The dual unit, shared listing is intended only to reinforce the inter-departmental collaborative delivery of that experience and to facilitate the allocation of faculty resources from each unit. The schedule is will follow a combination of ASU scheduling options. Two courses will follow schedule C and will have a semester long duration. The other 8 courses will follow the 7 and ½ week class schedule of the MBA program. Those courses will require some online/extra class time to meet the 40 contact hour standard of AACSB. Table 1 shows the working titles and temporary numbering scheme for the curriculum.

Table 1: MSBA Course Temporary Course Numbers and Titles
- CIS 505: Introduction to Enterprise Analytics
- SCM 516: Introduction to Applied Analytics
- CIS 508: Data Mining I
- SCM 517: Data-Driven Quality Management
- SCM 518: Analytical Decision Making Tools I
- CIS 509: Data Mining II
- SCM 519: Analytical Decision Making Tools II
- CIS 515: Analytics Strategy
- ECN 525: Applied Regression Models
- SCM 593: Applied Project I (1.5 hours)
- CIS 593: Applied Project II (1.5 hours)

Figure 4 shows how the curriculum will be delivered over the nine-month period.

Figure 4: Course Schedule

Term 1	Term 2	Term 3	Term 4
CIS 505	CIS 508	CIS 509	CIS 515
SCM 516	ECN 525	SCM 517	SCM 519
Semester 1		*Semester 2*	
SCM 518		CIS/SCM (1.5 CH ea.) 593: Applied Project	

Following are descriptions for each course:

CIS 505: Introduction to Enterprise Analytics
The Master of Science in Business Analytics curriculum contextualizes analytics within the business enterprise continuum. This course ensures a foundational understanding of that continuum by covering how data flows and is managed across the landscape of enterprise business processes. Course content also addresses how data integrity, data warehouses, analytics tool suites, business metrics and analytical models are created, deployed and managed to improve and optimize business productivity, to innovate new processes through experimentation and to improve decision making. Foundational data management topics most important to analytics include SQL and noSQL analytics, master data management, requirements analysis, dimensional modeling, analytics model lifecycle management and mobile/virtualized/cloud-based analytics platforms. The enterprise culture for analytics adoption is addressed through topics ranging from evidence-based decision making to business rule automation. The eight levels of analytics are examined: standard reporting, ad hoc reports, OLAP, alerts, statistical analysis, forecasting, predictive modeling and optimization. Planning for data growth and the emerging 'Internet of Things' are representative of topics related to exploring the future of enterprise business analytics.

SCM 516: Introduction to Applied Analytics
This course provides an introduction to the use of quantitative modeling tools and techniques to solve problems faced in modern supply chains. Students are required to implement the appropriate quantitative methods in an Excel workbook. The methods include forecasting demand, determining the capacity of a manufacturing line and the cycle times of parts being processed on the line, and methods to manage inventory.

CIS 508: Data Mining I
The MSBA program covers the skills and knowledge necessary for mastery of data mining. In the first of two courses in this area, data mining topics are advanced through analysis of applied, realistic datasets in areas like demand forecasting, credit scoring, customer churn, customer relationship management, customer segmentation, financial analysis, healthcare and supply chain management.   Students are introduced to predictive modeling platforms including R, SAS and SPSS. Many approaches to predictive modeling are covered including logistic regression, machine learning and decision trees. Data cleansing and transformation topics are addressed in detail. Approaches to managing and deploying predictive model assets, including bagging and boosting, are addressed. Techniques for assessing model efficacy including lift factor analysis and ROC curves are addressed. Enterprise processes related to data mining (e.g., SEMMA, CRISP and KDD) are integrated with content covered in the Introduction to Enterprise Analytics course. Exploratory Data Analysis (EDA) is covered; the course provides an understanding of when EDA approaches are required in contrast to more structured predictive analytics approaches – and how the two might be integrated for deep analytics in certain problem domains. Visualization is covered in the context of EDA, and it is examined in relation to enterprise performance management using dashboards and scorecards.

ECN 525: Applied Regression Models
The statistical foundations course ensures students are able to make use of real data and report statistical findings to lay persons. Students will leverage the most recent versions of available statistical tool suites. Topics will include, but are not limited to: multiple linear regression, models for quantitative and qualitative predictors, building regression models, autocorrelation, non-linear regression, piecewise linear regression, inverse prediction, weighted least squares, ridge regression, robust regression and non-parametric regression.

SCM 517: Data-Driven Quality Management
This course addresses the use of analytics tools and techniques to enhance the ability of quality management approaches to improve processes. The course starts out by introducing modern quality management approaches including Six Sigma and Design for Six Sigma. It then covers the DMAIC improvement cycle which is the core process used to drive Six Sigma projects. DMAIC refers to a data-driven improvement cycle used for improving, optimizing and stabilizing business processes and designs. DMAIC is an abbreviation of the five improvement steps: Define, Measure, Analyze, Improve and Control. Finally, an analytics roadmap to help users work through the DMAIC problem solving process is provided.

SCM 518: Analytical Decision Making Tools I
The MBSA program covers the skills and knowledge necessary for mastery of the use of quantitative modeling tools and techniques to support a variety of business decisions. In the first of two courses in this area, deterministic optimization techniques are covered. This includes linear programming, nonlinear programming, integer programming, network models, and a brief introduction to metaheuristics. The use of these models for a variety of common business problems will be covered. Students will be required to implement these models using Excel and stand alone software.

CIS 509: Data Mining II
Building on the topics of Data Mining I where the focus was on structured data, the topics in this advanced course address the skills and knowledge necessary to analyze unstructured data including text analytics. Advanced data mining topics include sentiment analysis, text mining, content categorization, and path analysis. In addition, big data approaches/tools including Hadoop MapReduce, WEKA, MOA and other emerging architectural approaches/analysis frameworks/open-source data mining tools are covered with an eye towards the nature of the big data problems they can address. These and other tools are applied to business problems in domains including social network analysis, multi-channel

marketing, data stream mining from sensors, and other domains where more structured predictive analytics aren't as effective. Data mining in the enterprise context requires rapid deployment into transactional systems; therefore topics for this course include in-database and in-memory analytics.

SCM 519: Analytical Decision Making Tools II

As a follow up to Analytic Decision Making Tools I where the focus was on deterministic models, the topics in this course address the skills and knowledge necessary to model situations where uncertainty is an important factor. Models to be covered in this second course include decision trees, queuing theory, Monte Carlo simulation, discrete event simulation, and stochastic optimization. The use of these models for a variety of common business problems will be covered. Students will be required to implement these models using Excel and stand alone software.

CIS 515: Business Analytics Strategy

This course addresses the strategic management of enterprise analytics. It provides a broad perspective to the role and importance of analytics to business. A focus is on pursing "analytics that matter;" those that are associated with sustainable competitive advantage. Topics covered and cases analyzed will address evaluating, strategically aligning, planning for and directing investments in, governance of, processes for and continuous renewal of analytics deployments in business. The course reinforces the role of analytics for decision support in enabling sound personal decision-making and for creating and maintaining an enterprise-level culture of evidence/fact-based decision making. A project management perspective to deploying analytics will address ethical issues surrounding customer data analytics. The course will also cover data and predictive model ownership issues, enterprise-level support for experiment-based innovation, embedding analytics in business processes and enterprise performance management as it relates to the analytics function in an organization.

SCM/CIS 593 (1.5 CH ea.): Applied Project

The Applied Project serves as the Master's degree culminating experience. The broad theme of the project will be to address a problem domain in an area where analytics solutions have not yet advanced to a point of wide-scale adoption. The idea is to align projects with Phoenix metropolitan area organizations willing to share data (perhaps scrubbed data) that addresses an important new frontier of analytics deployment for their organization. The challenge will be for students to identify from the training they have received the relevant tool suites, analytics frameworks, etc. they deem might apply – and to get 'as far as they can' in discovering insights from the data. This research orientation is intended to push the envelope of the students skills to under-explored, applied domains. In addition, students will work on an end-to end project whereby data sources are messy, business value needs to be defined and discovered, and their teaming and communication skills can be challenged and advanced.

APPENDIX
OPERATIONAL INFORMATION FOR GRADUATE PROGRAMS
(This information is used to populate the Graduate Programs Search/catalog website.)

1. **Provide a brief** (catalog type - no more than 150 words) **program description.**

   The Departments of Information Systems and Supply Chain Management in the W. P. Carey School of Business are proposing a new Master of Science in Business Analytics program. The initial program offering will be a lock-step, nine month program with 10 courses of 3 credit hours each. A new cohort will be admitted each academic year in the Fall semester and will graduate in May of the following calendar year. The program will be exclusively full-time and taught during the day. One (1.5 credit hours) applied project course from each discipline will serve as the culminating experience for students completing this Master of Science in Business Analytics degree program at Arizona State University. Later corporate, evening, and online program offerings may be added.

2. **Campus where program will be offered:**

   ☐   **ASU Online only (all courses online)**

   All other campus options (please select all that apply):

   ☐ Downtown   ☐ Polytechnic
   ☒ Tempe   ☐ West

3. **Admission Requirements:**

   i.   Degree

   There are two main audiences for the initial offerings of the MSBA Program: recent undergraduates from programs where quantitative skills have been emphasized and career advancers who have strong quantitative skills and seek to adapt those skills for growing business talent needs in the analytics area. Career advancers must be able to do full time, day program study; the program format will not cater to working professionals unless their work schedules are extremely flexible.

   A proposal for approval of a program fee has been submitted for the MSBA. A portion of funds from that fee will be included in a set-aside for financial aid. There are a variety of reasons for offering the program in the day, lock-step, full-time format. First, this approach is more efficient from a faculty resource utilization perspective than would be offering a part-time/evening program where the same courses need to be offered with more frequency on an annual basis. Second, for recently finished undergraduates, the experience will be a seamless continuation of a familiar undergraduate experience. Third, our analysis of entry level positions in the emerging analytics job market suggests that complete immersion into applied business analytics in an accelerated program will better position graduates for high-paying jobs than if they were working part- or full-time in another position while waiting to be employed in an analytics position. Fourth, this program format will attract a larger range of national and international recruiters who can utilize the W. P. Carey School's Career Services to recruit MSBA students on a regular schedule and with a guaranteed critical mass of graduates to select from.

   An important arena for recruiting students will be undergraduate programs with quantitative underpinnings at either ASU or other universities predominantly in the west - and specifically southwest regions of the U.S. It is anticipated that after the program is running for one year, there will be a major market for the degree from international students. It is also likely that corporate, evening, and online versions of the degree can be globally marketed.

Students must complete the online application form to apply to the Graduate College for admission to the program. They must also submit the following to the W.P. Carey School:

- Official transcripts of all coursework completed at institutions other than ASU.
- GMAT and/or GRE test scores.
- One letter of recommendation.

ii. **GPA**

Minimum Qualifications

A Graduate Management Test (GMAT) test score of 650 OR a Graduate Record Examination score of 1250. (All applicants must submit either a GMAT or GRE test score. The GMAT is recommended.)

iii. **English Proficiency Requirement for International Applicants.**

The English proficiency requirements are the same as the Graduate College requirement. (see Graduate College requirement http://graduate.asu.edu/admissions/international/english_proficiency): ☒ **Yes**   ☐ **No**

iv. **Foreign Language Exam:**
Foreign Language Examination(s) required? ☐Yes ☒No

v. **Required Admission Examinations.**
☒GRE **OR**   ☒GMAT   ☐Millers Analogies   ☐None Required

vi. **Letters of Recommendation:** ☒Yes ☐No

4. **Application Review Terms (if applicable Session):** Indicate all terms for which applications for Admissions are accepted and the corresponding application deadline dates, if any:

☒ Fall (regular)   Deadline (month/year): 3/15

5. **Curricular Requirements:**

5A. Will concentrations be established under this degree program? ☐ Yes ☒ No

5B. Curricular Structure:

Required Core Courses for the Degree		(New Course?) Yes or No?	Credit Hours
(Prefix & Number)	**(Course Title)**		**(Insert Section Sub-total)** **27**
CIS 505	Introduction to Enterprise Analytics	Y	**3**
SCM 516	Introduction to Applied Analytics	Y	**3**
CIS 508	Data Mining I	Y	**3**
SCM 517	Data-Driven Quality Management	Y	**3**
CIS 509	Data Mining II	Y	**3**
SCM 518	Analytical Decision Making Tools I	Y	**3**
CIS 515	Business Analytics Strategy	Y	**3**
SCM 519	Analytical Decision Making Tools II	Y	**3**

ECN 525	Applied Regression Models	N	**3**
Culminating Experience ***E.g.*** *- Capstone course, applied project, **thesis** (**masters only** – 6 credit hours) or **dissertation** (**doctoral only** – 12 credit hours) as applicable*			**Credit Hours** **(Insert Section Sub-total)**
SCM 593 Applied Project I (1.5 hours)and CIS 593 Applied Project II (1.5 hours) Project where students generate and evaluate alternative solutions to a real business situation and provide a project report deliverable to the client business.			**3**
Total required credit hours			**30**

Figure 4 shows how the curriculum will be delivered over the nine-month period.

Figure 4: Course Schedule

Term 1	*Term 2*	*Term 3*	*Term 4*
CIS 505	CIS 508	CIS 509	CIS 515
SCM 516	ECN 525	SCM 517	SCM 519

Semester 1	*Semester 2*
SCM 518	CIS/SCM (1.5 CH ea.) 593: Applied Project

6. **Comprehensive Exams:**

   Master's Comprehensive Exam (when applicable), please select the appropriate box.

   ☒   No comprehensive exam required

7. **For Doctoral Degrees that require a dissertation, submission of a written dissertation prospectus and its oral defense are required.** N.A.

8. **Allow 400-level courses:** ☐ **Yes**   ☒ **No**

9. **Committee:** Required Number of Thesis or Dissertation Committee Members: N.A.

Ira A. Fulton Schools of Engineering

-----Original Message-----
From: Paul Johnson
Sent: Thursday, November 08, 2012 12:04 PM
To: Amy Hillman
Subject: Re: MS Business Analytics

Hi Amy -

As discussed previously, Engineering does not object to the proposed MS in Business Analytics.

Thanks!

PCJ

College of Technology and Innovation

From: Mitzi Montoya <Mitzi.Montoya@asu.edu>
Date: November 8, 2012, 10:54:49 AM MST
To: Amy Hillman <AMY.HILLMAN@asu.edu>
Subject: MS Business Analytics

Amy-
The College of Technology & Innovation has no objections to WPC's new proposed MS in Business Analytics.

Mitzi Montoya
Sent from my DROID

School of Mathematical and Statistical Sciences - College of Liberal Arts and Sciences

From: Albert Boggess [mailto:boggess@asu.edu]
Sent: Friday, November 09, 2012 12:44 PM
To: Amy Hillman

Amy,

We have no objection, especially since your regression course (ECN 525) already exists.
We also have a regression course, STP 530, and it would be nice to list this course
as an alternative for those students who wish a more mathematically and statistically
intense treatment of the subject.

Best,

Al