ANNUAL PROGRAM REPORT

College	College of Business and Economics
Department	Management
Program	M.S. Business Analytics
Reporting for Academic Year	2017-2018
Last 5-Year Review	NA
Next 5-Year Review	2015-2020
Department Chair	Vish Hegde
Date Submitted	10/22/2018

I. SELF-STUDY *(suggested length of 1-3 pages)*

A. Five-Year Review Planning Goals

Present your planning goals from your last 5-year plan.

> The MS in Business Analytics (formerly, MS in Business Administration, Business Analytics Option) was founded in fall 2015. We have established the following goals:
>
> 1. We set enrollment targets of 120-140 students per academic year for the foreseeable future.
> 2. Convert and transform quarter curriculum to semester curriculum.
> 3. Establish collaborative relationship with companies and organizations in Bay Area.

B. Progress Toward Five-Year Review Planning Goals

Report on your progress toward achievement of the 5-Year Plan. Include discussion of problems reaching each goal, revised goals, and any new initiatives taken with respect to each goal.

Progress Made 1: In the academic year 2015-2016, we received 218 applications, out of which 97 were admitted and 64 had enrolled. In the academic year 2016-2017, we received 325 applications, out of which 162 were admitted and 94 had enrolled. In the academic year 2017-2018, we received 462 applications, out of which 210 were admitted and 104 had enrolled. We fully expect that the enrollment of 2018-2019 will reach approximately 120 students.

Progress Made 2: In the Q2S conversion process, we have made the following changes, which make the program more attractive to the perspective students and better meet the industry need.

- Included GMAT/GRE as an admission requirement.
- Obtained new prefix **BAN** for all courses offered by the program.

- Removed all the previous proficiency and fundamental courses and replaced them with two prerequisite courses: BAN 601 – Technology Fundamentals for Analytics and BAN 602 – Quantitative Fundamentals for Analytics.
- Converted six required courses to their respective semester counterparts.
- Created eight new electives: BAN 660 – Advanced Topics in Big Data, BAN 670 – Advanced Topics in Analytics. BAN 671 – Data Analytics with R, BAN 672 – Data Analytics with SAS, BAN 673 – Time Series Analytics, BAN 674 – Machine Learning for Business Analytics, BAN 675 – Text Mining and Social Media Analytics, and BAN 676 – Deep Learning for Business Applications.
- Transformed 1-unit Capstone in quarter system to 3-unit Capstone in semester system.

Progress Made 3: We have established MSBA Advisory Board with board members from Google, LinkedIn, SAP, Chevron, Walmart Lab, Safeway, Clorox and Kaiser.

C. Program Changes and Needs
Report on changes and emerging needs not already discussed above. Include any changes related to SB1440, significant events which have occurred or are imminent, program demand projections, notable changes in resources, retirements/new hires, curricular changes, honors received, etc., and their implications for attaining program goals. Organize your discussion using the following subheadings.

1. We started with offering each of the six core courses once a year in 2015-2016. In 2016-2017, each core course was offered twice a year. In 2017-2018, each core course was offered four times. In the current academic year, we are offering each core course in every semester.

2. To meet the increasing demand, we have hired a tenure-track ITM faculty member in 2016 and two more in 2017. They are currently teaching multiple MSBA core courses. In last academic year, we had two positions, but could not fill them. Currently, another search is under way, aiming to hire two tenure-track faculty members who are expected to join us in fall 2019.

3. Develop one or two more cutting-edge electives and potentially create concentrations under MS Business Analytics.

4. Offer some courses in hybrid or online format. It has been approved that we can offer BAN601 and BAN602 in hybrid/online format. We hope that more courses can be offered in hybrid format.

5. Strengthen and expand the collaboration with industry, in hopes that we can create more projects, internships and job opportunities for the students.

II. **SUMMARY OF ASSESSMENT** *(suggested length of 1-2 pages)*

A. Program Learning Outcomes (PLO)
List all your PLO in this box. Indicate for each PLO its alignment with one or more institutional learning outcomes (ILO). For example: "PLO 1. Apply advanced computer science theory to computation problems (ILO 2 & 6)."

PLO 1. Develop data analytics skills in making effective business decisions (ILO 1).

PLO 2. Develop effective written communication skills in conveying project ideas, activities, and findings (ILO 2).

B. **Program Learning Outcome(S) Assessed**
   List the PLO(s) assessed. Provide a brief background on your program's history of assessing the PLO(s) (e.g., annually, first time, part of other assessments, etc.)

So far, both PLO 1 and 2 have been assessed once in Spring 2017.

Summary of Assessment Process

Summarize your assessment process briefly using the following sub-headings.

Instrument(s): These two PLOs were all measured by faculty newly developed rubrics that are based on the existing rubrics used by many other universities. *(include if new or old instrument, how developed, description of content)*

Sampling Procedure: All the students in the target class were assessed.

Sample Characteristics: The participants were mainly graduate students majored in MS Business Analytics.

Data Collection: Data were collected by Chongqi Wu and Jiming Wu in Spring 2017. The data were collected via the course assignments in Blackboard. *(include when, who, and how collected)*

Data Analysis: We used Excel for data analysis.

C. **Summary of Assessment Results**
   Summarize your assessment results briefly using the following sub-headings.

Main Findings:

For PLO1, the last assessment was conducted in the spring quarter of 2017. The results indicated that majority of the students have met the expectations of building expertise in quantitative methods and tools for business analytics. We intend to increase the bars for the expertise in quantitative methods. Students are not necessarily capable of satisfactorily handle the quantitative job interview questions at the level of data analyst.

For PLO 2, the assessment results show that all of the students being measured have met the expectations of written communication. Only about 10% of the students being measured need to make improvement on one of the two items: word choice and grammar.

Recommendations for Program Improvement: *(changes in course content, course sequence, student advising)*

The recommendations for program improvement related to PLO1 include the creation of a new pre-requisite course BAN 602 – Quantitative Fundamentals for Analytics. This new course has been developed and is being taught, aiming to provide a solid foundation in quantitative skills for all the MSBA students. This course also incorporates some of the topics in Linear Algebra, which is much needed for further study of analytics. With the quantitative perquisite in BAN 602, other courses, particular BAN 612 – Data Analytics and BAN 620 – Data Mining have been revised to teach more advanced quantitative skills.

For program improvement related to PLO 2, we are thinking to use other courses to assess PLO2.

Next Step(s) for Closing the Loop: *(recommendations to address findings, how & when)*
Other Reflections:

To close the loop related to PLO1, we are implementing the recommendations from the previous assessment since the beginning of the fall semester 2018. We will have the next assessment in the near future to gauge its effectiveness.

To close the loop related to PLO 2, we will ask MSBA students to meet the WST requirement before they are allowed to take the capstone project that is used to measure PLO2.

D. **Assessment Plans for Next Year**
Summarize your assessment plans for the next year, including the PLO(s) you plan to assess, any revisions to the program assessment plan presented in your last five-year plan self-study, and any other relevant information.

PLO 1 and PLO 2 will both be assessed again in spring 2019.

III. **DISCUSSION OF PROGRAM DATA & RESOURCE REQUESTS**
Each program should provide a one-page discussion of the program data available through CAPR. This discussion should include an analysis of trends and areas of concern. Programs should also include in this discussion requests for additional resources including space and tenure-track hires. Resource requests must be supported by reference to CAPR data only. Requests for tenure-track hires should indicate the area and rank that the program is requesting to hire. If a program is not requesting resources in that year, indicate that no resources are requested.

A. **Discussion of Trends & Reflections**
Notable Trends:
Summarize and discuss any notable trends occurring in your program over the past 3-5 years based on program statistics (1-2 paragraphs). You may include 1-2 pages of supplemental information as appendices to this report (e.g., graphs and tables).

The student enrollment for MSBA has been increasing steadily in the last three years, from 64 to 94 to 104. But the enrollment dropped to 40 in this fall semester from 60 of last fall quarter. We hope this is

just a one-time effect of quarter-to-semester conversion and the enrollment will pick up again in next fall semester.

Reflections on Trends and Program Statistics:
Provide your reflections on the trends discussed above and statistics and supplemental information presented in this report.

Table 1: Faculty and Course Data for 2016-17

Faculty Data for 2017-18		
	Headcount	Percentage
Full-time tenure/track faculty	7	100%
Course Data for 2017-18		
Number of sections offered	25	
Average section size	34	

B. **Request for Resources** *(suggested length of 1 page)*

1. Request for Tenure-Track Hires

We need to hire two tenure-track faculty members for the MSBA program and we are hiring now. Since the faculty members who have been teaching in the MSBA program are also teaching courses in the IT Management and/or Operations and Supply Chain Management, there may be further need for new faculty membered dedicated to the teaching of business analytics.

2. Request for Other Resources

We need more computer lab related resources.

Industry outreach needs to be vastly improved in order for the continued success of the program. It will be extremely helpful if we have a dedicated person who can help connect with the industry and find opportunities in projects, internship and job placements for our students.