ANNUAL PROGRAM REPORT

I. SELF-STUDY *(suggested length of 1-2 pages)*

A. Five-Year Review Planning Goals

College	College of Business and Economics
Department	Management
Program	M.S. in Business Analytics
Reporting for Academic Year	2022-2023
Last 5-Year Review	NA
Next 5-Year Review	2023-2028 (Replaced with AACSB Accreditation 5-Year Review Report)
Department Chair	Hongwei Du
Author of Review	Surendra Sarnikar
Date Submitted	9/30/2023

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 100-120 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:

The overall enrollment of the MSBA program gradually stabilizes in the last few years, in spite of the Quarter-to-Semester conversion and the COVID-19 pandemic.

Table 1: Overall Enrollment MS in Business Analytics (CBE)

	Fall 2018	Fall 2019	Fall 2020	Fall 2021	Fall 2022
Full-time	112	137	129	123	193
Part-time	36	35	40	47	46
Grand Total	148	172	169	170	239

The program suffered a severe setback in new enrollment in Fall 2020. But it bounced back strongly in Fall 2021: The number of applications has steadily increased over time since then to set a new high for Fall 2023. We fully expect that the program will see strong demand. If the resource can stay up with the demand growth, the program can grow further.

Table 1: Admissions and New Enrollment: MS in Business Analytics (CBE)

	Applied	Admitted	SIR'ed	Enrolled
2018-2019	386	210	N/A	74
2019-2020	531	322	221	133
2020-2021	457	246	153	75
2021 -2022	683	383	267	109
Fall 2022	649	375	270	108
Spring 2023	404	142	95	42
Fall 2023	675	349	247	122

Progress Made 2: The previous CAPR reports summarized how the MSBA program has successfully converted and transformed the quarter curriculum to the semester curriculum, such as obtaining new prefix **BAN**.

In the 2020-21 academic year, with the support of the college, the program has revised and improved some of the prerequisite and core courses to stay cutting-edge and be better aligned with the program learning objectives. These courses are BAN 601 – Technology Fundamentals for Analytics, BAN 612 – Data Analytics, BAN 620 – Data Mining, BAN 630 – Optimization Methods for Analytics, and BAN 632 – Big Data Technologies. This academic year, the program is in the process of updating additional courses to meet the changing requirements of the industry.

Progress Made 3: The program switches to a different approach to industry outreach. Relying on MS Business Analytics group on LinkedIn.com, the program has established and organically grown its own industry and professional network. With some of the MSBA students now working at leading companies such as Adobe, Amazon, Apple, Asana, Facebook, Google, SAP, Tesla, Twilio, Twitter, Visa, Workday, and Zoom, the network enables current and former students to form a strong connection and community. It adds tremendous value to the future, current, and former students in their career pursuit.

Progress Made 4: Although not part of the five-year review planning goals, the program has revised the program learning objectives, curriculum map, assessment rubrics, and assessment methods. Along with course revision effort, the program's learning objectives are now better supported by the relevant courses. The assessment rubrics and methods are easier to implement. These changes make the assessment results more consistent and comparable. The revised rubrics were used for data collection and assessment in Spring 2022.

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.

Overview:

The MSBA program has successfully overcome the damage caused by the pandemic. Strong growth in applications present a great opportunity for further growth in enrollment, if the resource can keep up.

Curriculum:

With the revision of some of the prerequisite and cores courses in the last academic year, the MSBA curriculum stays cutting-edge among similar, competing programs in the Bay Area. It remains one of the leading reasons why some students choose us. The program offered 18, and 19 class sections respectively in Fall 2022 and Spring 2023.

Students:

Overall, the ratio of female students in the program has increased since the inception of the program and the program has been able to introduce more female students into the fields of STEM. In 2022 we saw a dip in the ratio of female students and we plan to investigate the cause going forward.

Table 3: Sex - MS in Business Analytics (CBE)

	Fall 2018	Fall 2019	Fall 2020	Fall 2021	Fall 2022
Female	81	104	111	89	106
Male	67	68	58	81	133
Grand Total	148	172	169	170	239

Obtaining STEM-designation in Fall 2016 explains the exponential growth in international students.

Table 4: Ethnicity - MS in Business Analytics (CBE)

	Fall 2016	Fall 2017	Fall 2018	Fall 2019	Fall 2020	Fall 2021	Fall 2022
Black		4	5	2	2	6	3
Asian	32	29	18	20	13	13	10
Latinx	4	3	1	3	3	2	1
White	14	8	3	5	8	6	4
Multiple Race	1	2	1	1	1	1	1
Unknown	4	9	5	2	1	2	4
International	36	98	115	139	141	140	216
Grand Total	91	153	148	172	169	170	239

Faculty:

MS Business Analytics (BAN) courses are taught by full-time faculty from two academic groups: six in ITM (Information Technology Management) and eight OSCM (Operations and Supply Chain Management), both housed in the Department of Management. It is difficult to find and hire competent part-time lecturers to teach BAN courses.

In 2022-2023 AY, among stateside classes, six full-time ITM faculty members taught 20 out of 38 class sections (52.6%) in BAN and ITM courses. Seven full-time OSCM faculty members taught 31 out of 56 class sections (55.3%) in BAN and MGMT courses.

The twelve full-time faculty members also include two associate deans, one department chair, and one program coordinator. They teach not only all the BAN courses, but also ITM and OSCM courses.

Given the introduction of a new undergraduate program (BS Business Analytics) starting Fall 2024, and since many of the MSBA faculty will be teaching in the BSBAN program as well, we expect additional faculty resources will be required to support the BSBAN and MSBA programs as student growth accelerates in the BSBAN program.

Staff:
The daily operations of the MSBA program have been previously supported by the centralized CBE Graduate Office. Due to turnover, there were some disruptions to the CBE graduate office in the summer and Fall of 2022. A new staff member was hired in Fall 2022 to support the MBA and MSBA programs. Given the growing size of the MSBA program, additional staff and student peer advisors would be needed to support the students in the program.

Resources: *(facilities, space, equipment, etc.)*

The current area in critical need of resources is for staff to support graduate programs and student requirements.

Assessment:
The program has matured and entered a steady and sustainable stage with potential for further growth.

Other: *(e.g., major program modifications)*
The program is contemplating some further improvement: (1) revising the format of capstone courses to better support students' employment goals and to introduce a graduate research alternative to capstone course (2) introducing online classes to better meet the needs of working students (3) two courses have been revised to reflect new developments in analytics, and (4) a new internship course has been proposed and is currently undergoing approval process to support student internships

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)."

The program has revised its learning objectives in Spring 2022. The new learning objectives are listed below.

PLO 1. Students who graduate will develop advanced knowledge and skills in using business analytics technology and applications

PLO 2. Students who graduate will build expertise in quantitative methods and tools for business analytics.

PLO 3. Students who graduate will apply data analytics in making effective business decisions (ILO 1).

PLO 4. Students who graduate will develop effective written communication skills in conveying project ideas, activities, and findings. (ILO 2).

B. Summary of Assessment Process

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

The revised PLO's along with the revised rubrics were assessed in Spring 2022.

Instrument(s): CBE funded the development of revised rubrics during Summer 2021. The revised rubrics were used in the assessment of the PLO's

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

Sample Characteristics: The participants were graduate students majoring in the MSBA program

Data Collection: Data was collected by faculty members Yuanyuan Gao, Peng Xie, Zinovy Radovilsky, Balaraman Rajan, Jia Guo and Chongqi Wu

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:

PLO1: A majority of the students (75%+) met or exceeded expectations for all four performance dimensions of PLO1. However, this is below the target expectation set by the program of 85%.

PLO2: A majority of the students met or exceeded expectations for all five performance dimensions of PLO2 and met or exceeded target expectation of 85%.

PLO3: A majority of the students met or exceeded expectations for all four performance dimensions of PLO3 and met or exceeded target expectation of 85%.

PLO3: A majority of the students met or exceeded expectations for all five performance dimensions of PLO3 and met or exceeded target expectation of 85%.

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

The MSBA AOL committee met in Spring 2023 to discuss the results of the assessment and potential improvements to the program. The following is a summary of actions identified in the Closing the Loop discussions.

1. Revise assessment instrument, mechanism and rubric for LO1 to increase focus on business applications trait
2. Use same instrument to assess LO2 across different sections.
3. Design individual assessment for LO3
4. Change goals for LO2 &3 to 95% target
5. Gather indirect measurements on PLO's through exit surveys and employer feedback

Other Reflections:

The program has implemented some of the recommendations for program improvement from the last assessment (See Progress Made 2 above). Some further improvements include:

- revise course instructional modality and offer sections using online modalities to make the program more accessible to students;
- revise a few electives to introduce new developments in analytics.

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.

The MSBA AOL committee will meet again in Fall 2023 to continue work on the potential improvements to the program.

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 proportion of international students in the MSBA program has been increasing steadily over the last few years: 40% in 2016, 64% in 2017, 78% in 2018, 81% in 2019, 83% in 2020, 82% in Fall 2021 to 90% in Fall 2022
- The number of applications rebounded in Fall 2020 and continues to increase through 2021 and 2022. New student enrollment also recovered to 106 in Fall 2022 from 38 in Fall 2020.
- We expect that the application and enrollment numbers will continue to grow post COVID.

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

MSBA program has potential for further growth. Thanks to the support of the Management Department, full-time faculty have taught many of the MSBA courses. However, additional faculty hires will can help support further growth of the program.

A key strength of the program is its cutting-edge curriculum. Analytics is a fast-changing field. It is crucial for the program to keep its curriculum up-to-date.

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

1. Request for Tenure-Track Hires

Two additional tenure-track faculty members were hired in 2022/2023 for the MSBA program. One hire is in the area of IT Management and another in the area of Operations and Supply Chain Management. However, given the strong growth in enrollment of the MSBA program and the substantial number of courses being taught by part time faculty, there is a need to hire additional faculty dedicated to the teaching of business analytics and support future enrollment growth. Moreover, the introduction of the new BS Business Analytics program starting Fall 2024 will further strain the availability for faculty resources for the program.

2. Request for Other Resources

Industry outreach needs to be 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.