

Submission date: February 9, 2020

Program/s in this review: Management Information Systems BBA (BBA MIS)

Specialized accrediting agency (if applicable): AACSB

Campuses where the program is delivered: Anchorage

Members of the program review committee:

- Name, Title, campus

1. Centrality of Program Mission and Supporting Role (700 words or less)

Relevancy of the program

The BBA MIS program is the only program of its type in Alaska. It is the only AACSB accredited STEM-based degree program offered at any of the business colleges, schools, or departments in the three accredited UA universities (UAA, UAF or UAS). The BBA MIS program is also the only program at UAA that provides students with a strong combination of technical and business foundations. Graduates of this program understand and are adept at the technical aspects pertaining to computer systems as well as the business requirements for these systems. Because of this combination of business and technical expertise, BBA MIS graduates are able to fill a variety of Information Technology (IT) jobs, some that are common to other programs at UAA, but many that are unique to the BBA MIS program: business analyst, database administrator, project manager, or network engineer.

Supporting other academic programs

Graduates of the BBA MIS program are in high demand, with many more employer requests for interns and potential employees than the program graduates each year. The program is not a feeder for other programs, but attracts several students from other majors to minor in MIS. In particular, BBA ACCT students tend to seek an MIS minor, but the minor is highly beneficial to MKT, LOG, and FIN students as well.

Specific workforce development and employment opportunities

Because of the hands-on training students get on the latest technologies, they tend to find employment as soon as they complete some of the first classes in the program. As such, most MIS students go to school only part-time, and they take relatively long to graduate. At the same time, the program provides students with opportunities to gain experience via real-life projects (some projects spanning multiple semesters) and via internships with local employers.

Sources of extramural support and funding for the program

As part of a new initiative to recruit more students, faculty are working with the Educator Breakout subgroup of a consortium of local employers, the Anchorage Technology Forum. The group includes local professionals, members of the K-12 institutions in the greater Anchorage and members of higher education institutions in the area. The goal is to map and better align pathways leading from K-12 education, via higher education, and into the many unfilled IT jobs available locally. Part of the plan is to use a more generous set of internships and co-op opportunities that employers will make available to attract students into the MIS program early on and to entice them to complete the program and join the employer's staff.

As an example of extramural funding, faculty members have partnered up with key industry players to make the latest technologies available to BBA MIS students as a training platform. In 2019 the ISDS department joined the cybersecurity academy program offered by Palo Alto Networks (PAN), a technology leader in the industry. ISDS networking and cybersecurity courses utilize the free PAN teaching resources to provide MIS students with hands-on experiences with the latest technologies. ISDS is the only department within UA that is a part of PAN cybersecurity academy and that offers cybersecurity administration courses in the business environment.

The BBA MIS program is currently running with a very lean faculty staff, which has in turn led to challenges in recruiting students. Having lost more than half of its peak of ten faculty members and having only hired one faculty member in the last fourteen years, the program is in need of infusion of new hires. Two positions (one tenure-track and one term) have been approved and will be recruited in spring 2020, but the market is highly competitive and the timing is already past the optimum hiring window.

2. Program Demand (including service to other programs), Efficiency, and Productivity (7 year trend; 1400 words or less)

The number of degrees awarded has fluctuated over the years, but has remained too low for the needs of local employers. The program has not had a marketing budget and has not been able to attract sufficient students to meet the workforce needs in the state. Three initiatives are likely to lead to a healthy increase in the number of students enrolled:

- Partnership with K-12 institutions in Anchorage to better market the program and to attract early on more students interested in IT careers
- Partnership with local employers to better align curriculum and to line up internship and co-op opportunities to attract more students
- A new and stronger ISDS Advisory Board is helping with the curriculum alignment and with a stronger connection to the local employers

The years-per-degree figure is highly variable because of the small number of students in the program. A high of 16.0 years per degree in 2018 is likely an outlier, while most other years range from 4.9-8 years per degree. Another reason for the lengthier time-to-degree for BBA MIS students is the market pressure for students to take on jobs, often fulltime, as soon as they complete even one or two classes. Once they acquire skills that are in high demand in the marketplace, students are enticed by highly lucrative salaries on jobs that do not require the completion of a degree.

The enrollment trend is difficult to evaluate, due to the large fluctuations. With the loss of several key faculty members in recent years, the program has suffered from reduced staffing. The remaining faculty have not been able to take time away from teaching to dedicate to marketing the program and to recruiting students. At a time when enrollments are soaring in Computer Science and Computer Systems Engineering, this lack of attention to marketing has led to lower growth in the BBA MIS program.

There is a very high demand for MIS graduates. As an example, cybersecurity job posting in the US exploded in 2019. According to the BurningGlass report, the demand has grown 94% since 2013, three times faster than the overall growth of IT jobs. According to a Gartner survey in 2019, 61% of organizations admitted that they are struggling to hire cybersecurity professionals.

Among the positions advertised on the UA System Career Coach, the graduates of the UAA BBA MIS program are qualified to apply for the following job categories: IT Project Managers, Database Architects, Data Warehousing Specialists, Business Intelligence Analysts (all listed with \$93,408 median salary, 55 annual job openings), Information Security Analysts (\$105,951 median salary, 7 annual job openings), Computer and Information Research Scientists (\$95,412 median salary, 36 annual job openings), Database Administrators (\$79,849 median salary, 12 annual job openings) and Software Developers, Applications (\$98,910 median salary, 42 annual job openings).

The BBA MIS program tuition revenue is lower for now, due to the lower enrollment, but program faculty also teach multiple large enrollment classes for the BBA core. As such, the high enrollment core classes compensate for the lower enrollment in the BBA MIS classes. Given the drastic drop in staffing in the department, it is difficult to calculate whether the tuition from the remaining classes is sufficient to cover the cost of the remaining faculty. With an increase in enrollment, the program will become a revenue source for the college.

3. Program Quality, Improvement and Student Success (1500 words or less)

Specialized accreditation and status

Three features stand out about the BBA MIS program, as compared to other IT-related programs in Alaska. First, it is accredited by the AACSB, along with the other BBA programs in the College of Business and Public Policy. Second, it provides direct value to the community, as graduating seniors work on a project for a community member, typically a small or disadvantaged business. Third, the program curriculum and structure ensure that every graduate has hands-on experience, some in multiple areas of MIS and on multiple projects. The end result is a high-quality program, with a high placement rate and salary for the program graduates.

Taking these features one at a time, the BBA MIS is one of the programs accredited by the AACSB in the College of Business and Public Policy. This is a critical consideration for those students who elect to pursue a graduate degree, but is also a certificate of quality for employers. Thanks to the high quality of the program, graduates are in high demand in Anchorage and outside. On average, three quarters of them remain and get jobs in the field in Anchorage. Entry level salaries are close to \$79,000 according to figures from the Emsi data set. While employers are highly satisfied with the graduates, there are not enough graduates to fill the open jobs. In fact, many of the employers are alumni of the BBA MIS program who work closely with the department to provide projects for students, to mentor students, to provide internships, and to hire the newest crop of graduates. Because these alumni have received a solid education during their time in the BBA MIS program, they trust that each graduate is trained at the same level of technical expertise.

Secondly, the program provides direct IT assistance to small and disadvantaged businesses in the community, in a market where such assistance is both scarce (due to a shortage of IT professionals) and expensive. The BBA MIS program involves students in a community-engaged series of courses, an AAC&U high-impact practice. Over the course of three semesters, in three successive courses, students take on a real-life project for an organization in the community. In each semester, in turn, students carry out the system analysis, develop a project plan, and develop and implement the system. Over the years, BBA MIS students have developed e-commerce websites, mobile apps, SharePoint sites, dashboards, and other types of applications for a variety of small businesses in Anchorage and Alaska. Many of these businesses are non-profits or small operations that cannot afford a dedicated IT staff and that would not be able to afford to pay an outside consultant to develop such a custom system. Based on market rates for IT labor, each of these projects is valued at \$30,000-\$60,000 and they are delivered by MIS students entirely pro-bono.

The third and final unique feature of the BBA MIS program is that the series of courses that involves students with an actual business also provides students with direct, hands-on practical experience in the IT field, even for those students who do not already work in IT and who do not take advantage of internship opportunities during their years of studies.

Currency of the curriculum

These three features of the BBA MIS program are the result of careful curriculum planning by the program faculty. The three-course structure and the community project were put in place two decades ago, but the actual contents of all the courses in the program has been continuously updated and expanded. Around the backbone of the three courses mentioned earlier, the program has a set of core required courses and a wider set of program electives. The core courses have remained anchored in the MIS fundamentals, but the technologies covered have evolved with those in the marketplace. For example, the computer networking course has used the virtualization on our private cloud for hands-on lab activities instead of the traditional physical lab environment. The course has also moved away from the more traditional Cisco networking technologies to include those of Palo Alto Networks, while the database course has moved from the closed Oracle database to more open-source options, more cost competitive and more widely used in small businesses. To keep up with new developments, course textbooks and technologies used are updated regularly, practically every time the course is offered.

The elective courses have changed both in topic and within the topic. The introductory programming courses have evolved from the C programming language many years ago to C++ (object oriented), then to C# (geared towards web and cloud), and most recently to VBA (Visual Basic for Automation) to make programming more accessible to students and to provide a gentler introduction to programming built upon the Excel knowledge students already possess. The more advanced programming courses also switched from C++ (object oriented) to Java (open source, object oriented) to Python (open source, object oriented, widely used for data analytics, machine learning, web development, and cloud computing applications). These are examples of changes within a topic (in this case, programming). Changes in topic have arisen with the introduction of new electives, replacing older courses on help desk support and on multimedia authoring. New

elective courses have been designed to help students learn cutting-edge technologies, concepts and trends. Topics include big data, business analytics, business intelligence, enterprise resource planning, data warehouses, and cloud computing, providing students with valuable hands-on experience and an opportunity to participate in national and international competitions. The cloud computing class was taught by an adjunct who is a graduate of the BBA MIS program, who is currently working for a major oil company in town, and who completed a master's degree on cloud technologies just a year ago.

Innovative program design

Program design was covered earlier when discussing the three-course sequence. Although not a new concept anymore, the three-course service-learning sequence is continuously renewed as the contents of the three courses, the nature and scope of the projects, and the size and complexity of the projects evolve. A plan under works is to expand the range of entry points into the program, by allowing students to choose early on a path that does not require intensive computer programming. Instead, students interested in business analytics or in computer security would follow either of those tracks as an alternative to programming. A program change like this would require the department to replenish the depleted pool of qualified faculty. The remaining faculty members in the department are stretched too thinly to be able to develop and to offer additional classes, even as the need for new classes tends to accelerate due to technological progress.

Quality of distance offerings

The tenured faculty who teach the core distance offerings have gone through the Quality Matters certification and have applied it to their distance courses.

Student success

The best indicator of student success is the fact that BBA MIS students are able to secure highly lucrative jobs in their field of training right after (or even before) graduation from the program. We have already highlighted some of the program features that incorporate high-impact practices that lead to student success: experiential education in the student projects (a capstone class), a rigorous selection of students for internships, close mentoring of students by faculty advisors, as well as participation in collegiate student competitions (described in more detail below). Throughout the program, students mentor each other in class and outside class, particularly in the student clubs that participate in the national collegiate competitions. Advising in the program is carried out by faculty, once students reach upper division. This way, students receive advice about both class sequencing and internships, as well as career pointers and connections to professionals in town, many of whom are graduates of the program.

Student accomplishments

While there are no exit exams that BBA MIS student are required to pass, some of the best evidence of the program quality is that MIS students have been the recipients of numerous awards at national collegiate competitions in areas across the BBA MIS curriculum: web development, database development, computer networking, and information security. It is prestigious already that the UAA student teams qualify to participate in regional and national phases of these collegiate competitions, but even more impressive is the range of awards students have garnered over the years. These awards demonstrate that BBA MIS students are at least as well prepared (in some cases even better prepared) than colleagues at some of the most prestigious universities in the country.

Since 2014, MIS and CS students as a team have participated in the National Collegiate Cyber Defense Competitions. In this competition, MIS students typically take the roles of team captain (manager), network administrator, and IT business liaison, as they understand how to use IT for business. MIS students work with system engineers (often, CS students) and optimize the available team resources to complete all business tasks. The UAA team has placed in the top three in the At-Large Region every year since 2014. In 2016 and 2019, the UAA team qualified for the final level, the national championships. Most recently, in 2019, the UAA team outperformed Stanford University and the University of Washington and won 4th place nationally, out of more than 200 universities/colleges in the US.

Students in the Data Warehouse and Business Intelligence class, an elective class, analyze datasets provided by non-profit organizations. A UAA student team was selected as a finalist in the 2019 Teradata Data Challenge, an international data analytics competition.

4. Program Duplication / Distinctiveness (300 words or less)

The UAA BBA MIS program is unique in the state. The only similarly intended program, the UAS BBA MIS, is not AACSB accredited, offers fewer electives, and has less technical depth. Although there are areas of some overlap between the UAA BBA MIS and the UAA BS CS/CES program, the latter is more focused on theory and geared for professionals who would work to develop IT. Instead, the BBA MIS program trains students to deploy IT that is aligned with the needs of businesses. BBA MIS graduates are well-versed in technology, but MIS graduates are also conversant in the language of business, finance, understand business law and organizational behavior. MIS graduates are excellent communicators, especially when it comes to bridging between technology staff and non-tech business users. Because of their ability to communicate across business functions, many BBA MIS students end up working as project managers or system analysts rather than as developers. To develop similar business acumen as a BBA MIS graduate, a CS graduate would have to spend many years working in a business or a non-MIS BBA graduate would have to get a master's degree in IT or in project management, both expensive and time-consuming endeavors. Similar considerations apply to the UAF CS program.

Another related but not duplicative program is the UAA BS ATL program that takes professionals with technology backgrounds but without a college degree and helps them get a deeper understanding of business, to prepare them for a managerial career. The BS ATL program is not developing the IT side of the student, and their graduates cannot compete with the BBA MIS graduates in their technical abilities, nor in the breadth and depth of management expertise.

5. Summary Analysis (500 words or less)

The BBA MIS program is a well-designed program that prepares students for successful and highly lucrative careers which meet well the needs of local employers. The program has been neglected to the point where it is in danger of collapsing. To put things in perspective, faculty ranks have decreased from a high of ten down to three over the past ten years. The last hire into the program was made in 2006, despite of numerous retirements and departures over the years. The faculty are well-trained and highly qualified, but they are spread very thinly, unable to take time away from their teaching to dedicate to program marketing and to student recruiting. Two new faculty hires have been approved (one term and one tenure track), and this is likely to breathe new life into the program by providing resources for the marketing, partnerships, and expansion plans mentioned in this program review.

To demonstrate the need for marketing the program, it is apparent that many prospective students do not even know that the program exists. Those who enroll seem incredulous that such a quality program exists at UAA, that the job prospects are so stellar, and that more students are not drawn to the program. In a recent discussion with the small cohort graduating in May 2020, students were expressing amazement at and gratitude for the quality of education they received. They were also surprised by the tiny size of the program. But many students in the K-12 system are either not interested in IT careers or gravitate towards the better-known CS programs.

The plans faculty have for reenergizing the program will require investment in marketing, additional staffing to develop curriculum, as well as coordinating with the College of Engineering, where too many students drop because of the first two introductory programming courses. The partnership with local employers will lead to a curriculum that will be even more closely aligned with their needs, and the use of internships and co-ops will further help recruit students.

Given the quality of the program, as demonstrated by awards at the national collegiate competitions and by the job prospects of the graduates, given the continued need in the community for more graduates of the BBA MIS, and given that no other program can graduate students with similar abilities, the BBA MIS is a program that Alaska cannot do without. Moreover, this is a program Alaska must grow, and grow rapidly: with the approved faculty hires and with a small amount of marketing funding, the program enrollment can soon increase to start filling some of the jobs local employers have had unfilled for several years now.

