Program Review - Management Information Systems
Department of Supply Chain & Management Information Systems
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Weber State University

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Review Process

On February 26, 2021, the review team conducted an evaluation of Weber State University's Management Information Systems (MIS) program in accordance with the institution's requirement to evaluate the program every 5-7 years. The evaluation process consisted of (1) reviewing the MIS Self-Study Report that was distributed to the review team prior to the evaluation date, and (2) conducting Zoom interviews with numerous representatives and stakeholders of the program, including: Matthew Mouritsen (Dean, GSBE), Seokwoo Song (Chair, Department of Supply Chain & Management Information Systems), senior MIS faculty, junior MIS faculty, MIS students, and administrative personnel for GSBE. The review team was charged with identifying and articulating the strengths, challenges, and weaknesses of the MIS program and providing recommendations for the program's mission statement, curriculum, student learning outcomes and assessment, academic advising, faculty, support, relationships with external communities, and the results of previous program reviews. The team's assessment of each of these areas is provided in the following sections.

A. Mission Statement

The mission statement of the MIS program is as follows: *To attract, engage, and develop transformational leaders equipped with the knowledge, skills, and abilities necessary to design, secure, and manage the information systems supporting organizational and managerial decision making.*

We will accomplish our mission by creating an innovative curriculum, utilizing cutting-edge facilities, and fostering an engaging learning environment. We will also conduct novel creative research, and performing meaningful service to the university and community.

Areas of Strength

The review team commends the MIS department for clearly articulating the outcomes of the program. The student learning outcomes and the assessment of those outcomes as detailed in Standard C of the self-study report align with the mission statement. Through the goal of innovative curriculum, the MIS program will prepare students to plan for the best new technologies and support the integration of these tools into the relevant business processes.

The curriculum itself is clearly defined and communicated to students via the MIS graduation map. The program mission and vision statements were revised in 2018-19 with a concerted effort towards consistency and support of the college and university mission statements. The self-study report asserts on p. 3 that "the MIS program supports the mission of the Goddard School of Business and Economics (GSBE) as well as the mission of the University."

Areas for Improvement

Although evidence exists regarding the accomplishment of mission objectives, specifically the number of students accepted into Carnegie Mellon University for graduate work and the results of the 2019-20 exit survey, no specific process is outlined for evaluating the mission statement outcomes.   Instructional effectiveness is assessed using the GSBE Assurance of Learning (AoL) process associated with AACSB accreditation, but the review team recommends an additional formalized process for periodic assessment of program outcomes related to student proficiencies as defined by the mission statement. The department may also wish to consider including a reference to the expanding certification options in the mission statement and how these opportunities enhance service and outreach to community members.

B. Curriculum

Areas of Strength

The review team commends the MIS department for its efforts to maintain a program curriculum that is both rigorous and relevant. The rapid pace of change in the IS field necessitates continuous evolution of curriculum in order to prepare students for the workforce, and the program has done a good job keeping the curriculum up-to-date within the resource constraints it faces. In particular, we note the following with respect to curricular strengths of the program:
- The core courses of the MIS program provide solid coverage in the foundational areas of information systems principles, database design and implementation, networks and data communications, information security, business analytics, software development, and systems analysis and design.
- As of 2019-2020, the curriculum has introduced MIS 2030, Introduction to Business Analytics, as a new required course for MIS majors in response to the growing demand for analytics skills in the IS workforce.
- The program has created multi-level mappings between its core and elective courses and its three target learning outcomes that focus on students' ability to (a) collect, analyze, and use data to improve business decision making, (b) develop and implement information systems, and (c) understand and plan for the best new technologies and how to integrate them into the organization's business processes. Each outcome is emphasized in several courses and formally assessed in at least one course.
- The program has designed several courses to prepare students to complete high-demand industry certifications such as Network+, Security+, and CAPM. The curriculum's strength in the area of information security is particularly noteworthy.

- The program curriculum shows evidence of innovation and adaptability, with faculty reporting the ability to develop new courses relating to emerging technologies and student needs. Curriculum input has also been sought from the newly formed MIS advisory board in fall 2020. Several innovations have been recently introduced to several courses, including case-based projects, industry tours, and industry guest speakers.
- Students report appreciating the minimal prerequisites for most courses, allowing flexibility in the selection and sequence of courses.

Areas for Improvement

The team identified a few areas for improvement with regard to the program curriculum:
- *Curriculum management*. Although faculty report flexibility in introducing new courses and internal discussion of curriculum needs, there appears to be no formal process for reviewing and updating the curriculum in a systematic way. The team recommends that the program form a curriculum committee and a documented process for reviewing curriculum proposals and approving changes.
- *Course availability/scheduling*. Students expressed some frustration with the number of available electives and the limits on when courses can be offered primarily due to the size of faculty. (For example, the program can currently offer only one course in the Data Analytics minor.). Currently delivered courses are at capacity and many faculty are teaching overload courses to keep up with demand. MIS competes for financial resources with more high profile programs such as business administration and SCM. Given the increasing importance of MIS as a profession (especially in analytics and cybersecurity), the recent growth of the undergraduate program, and the introduction of the planned master's program, the team sees a **strong need** for additional faculty to ensure that the program can deliver a competitive curriculum that meets industry needs.
- *Course content*. Students expressed unanimous desire for Python to be included in the MIS program curriculum since it represents the current popular language in data analytics and security positions. The team echoes the recommendation of the last review team that the program seriously consider migrating it's programming courses to Python. (Leveraging the CS 3030 scripting course could be an interim solution until this transition is made.) Students also expressed a desire for additional industry guest speakers in courses. The team recommends that the program leverage its newly formed advisory board to create such opportunities for students.

C. Student Learning Outcomes and Assessment

Areas of Strength

The review team commends the MIS faculty for their dedication to student learning. Students graduating from the program are having great success in graduate school and are succeeding in the workforce. The review team recognizes the pedagogical changes implemented in the program to align the courses with high-impact learning practices. The students interviewed

agreed with the overall effectiveness of the course work. Specifically, courses were updated to help prepare students for the Network+ and Security+ certification exams. Students expressed a strong desire to be prepared to sit for industry certifications.

The review team commends the MIS department for the substantial progress made in establishing program-level learning outcomes. The outcomes have been mapped to specific courses in the program. Each course contributes to the achievement of the outcomes, either as introducing material and concepts, emphasizing introduced material, or providing artifacts for formal assessment of the outcomes. In addition, a capstone project was added to MIS 4730. The project helps prepare students to take an industry-recognized project management exam, the CAPM (Certificate Associate in Project Management). In terms of assessment, the capstone project requires students to integrate knowledge learned in various courses, both technical and that related to key business functions. Having such a capstone project greatly enhances the assessment of outcome three, which concerns the students' ability to understand new technologies and know how to integrate them in an organization's business process. Finally, clear thresholds have been established for measuring student performance in achieving outcomes.

Areas for Improvement

Substantial progress has been made in establishing student outcomes, mapping the outcomes to courses, and assessing the outcomes for the first time. While student performance in assessed outcomes was good overall, the review team recommends where appropriate that specific action be taken based on the findings of the first assessment. The recommended action may be to adjust the assessment or focus more on particular content before the next assessment is performed. In this manner a system for continuous improvement can be implemented. For example, in the interpretation of findings for outcome 1, it was noted that "students struggled in evaluating model performance". The review team recommends incorporating that finding as an adjustment to MIS 2030 that would help students better understand model performance evaluation methods.

D. Academic Advising

Areas of Strength

The review team commends the commitment and energy demonstrated by the core advising team serving MIS students and the organizational effort behind the Advising Collaboration Committee, which the self-study report defines as Academic Advisors, Department Chairs, and Administrative Specialists who ensure that services are meeting the needs of the academic departments and students.

The review team recognizes that students receive responsive and appropriate assistance when planning their individual programs of study. Advisors report adequate resources in order to fulfill their responsibilities and an ongoing need to become more proficient in the subject matter

taught in the program. Advisors noted that if students are sufficiently motivated, then there are adequate resources to serve the needs of those students. Most students typically meet with the same advisor, and MIS faculty are accessible and available to support students about the technical details of course content.

The review team especially commends the MIS faculty for their active participation in mentoring and advising students. Faculty are considered an integral element of student advising and advisors do not hesitate to refer students to faculty for additional support and guidance. Students report that professors do a good job of assisting students in building their resumes.

The review team also commends the program's support for students when making career decisions and in seeking placement after graduation, whether in employment or graduate school. Students report that Brett Merrell, Director of Career Services at GSBE, provides exceptional assistance in seeking employment opportunities. BSAD 2899, taught by senior advisor Karen Hicks, is a vital component of student success. Given employers' increasing interest in a student's total body of work, the team recommends that students be encouraged to develop a portfolio of select projects to address this more prevalent expectation during the hiring process.

Areas for Improvement

The review team understands the reality of advising personnel constraints - there are only a certain number of advisors available to serve students. However, the numerical ratio of three college advisors supporting approximately 1700 undergraduate students must be noted, even when considering that all 1700 students do not necessarily seek advising services. During the review committee's visit, it was mentioned that national best practice is about 250 students per advisor. The potential for providing less than sufficient advising for MIS students because of advisor time limitations looms as a distinct possibility. The review team recommends that this concern be addressed by both the program and college administration.

E. Faculty

Areas of Strength

All full-time faculty in the MIS program demonstrate a willingness to innovate and respond to the rapidly changing subject matter associated with MIS discipline. Each of the faculty members have both overlapping and complementary expertise with their fellow colleagues, which is necessary in a program enjoined to teach a substantial breadth in well-established and current topics on information systems. Faculty expressed enthusiasm for their program's mission but also maintained a realistic awareness of the resource limitations that confront most academic departments. Faculty's assessment of institutional support is very positive, reporting an atmosphere that fosters the exploration of ongoing curriculum revisions to meet the needs of students. Faculty also claim support from administration beyond the department, including the Dean's and President's office.

The core faculty are demographically diverse: of the five tenure and tenure-track faculty, 60% are non-white, and 20% is female. As the size of faculty increases in the future, the review team strongly recommends maintaining representative percentages of ethnic- and gender-diverse faculty members.

Although the team heard commentary about the general reluctance to increase the number of adjunct instructors at the expense of expanding core full-time faculty, the academic qualifications of the six adjunct/contract faculty meet or exceed the instructional demands of the discipline. Adjunct faculty were also mentioned as being of high quality and appealing to students because of their real-world experience and a prevailing "guest lecture"-like status.

Faculty cited sufficient funds to support professional development and training, though the budget was limited recently for 20-21. The review team recommends that consistent and commensurate financial support for MIS faculty be maintained for the foreseeable future, especially in light of the significant endowment afforded their colleagues in Supply Chain Management.

Areas for Improvement

During the review team visit, it was noted that the number of full-time MIS faculty members has remained flat at five for the last two decades, even amid the shifts in departmental organization and name changes during this time period. In addition to the traditional inherent demands of increasing enrollments and the rising relevance of MIS in the workplace, hiring additional faculty is absolutely necessary if the proposed MS in MIS is to proceed successfully.

Faculty report a baseline 3/3 annual teaching assignment, which at face value allows faculty time to pursue scholarship and service opportunities. In reality, several faculty have assumed extra overload sections (e.g., Dr. Clements for the MIS 2020 course) and their associated teaching commitments are strained due to assisting with general education courses such as MIS 1100 SS - The Digital Society as well as MBA classes. These extra-departmental assignments draw faculty from the core MIS courses and severely limit the number of electives that can be offered to MIS degree-seeking majors. The review team was not able to locate department guidelines on regulating overloads, though University policies and procedures (PPM 3-50 II.D) limit the amount of supplemental income a faculty member can accrue per year. Faculty reported that sections of MIS 2020 are expected to increase in the future and that this particular course should be taught by a full-time faculty member because of the unique opportunities it provides to reach students considering a degree in MIS. Collectively, the evidence cited above strongly supports the hiring of at least one additional faculty member in the very near term, preferably within the next academic year in preparation for 2022-2023.

Page 8 of the self-study report states that faculty "undergo an annual review for teaching effectiveness", which includes a review of course evaluations and an assessment of the rigor/relevance of course materials. Faculty are expected to maintain updated knowledge skills,

provide syllabus with learning outcomes, hold office hours, participate in assessment of learning, and engage in continuous improvement. The review team notes the lack of a clear description of the formal process associated with these reviews, specifically:

- The time during the academic year in which the review typically occurs
- The individual who conducts the review (assumption is the Dept. Chair)
- The utilization of peer reviews in the evaluation process
- The method by which faculty report their teaching
- The method for providing feedback to faculty
- The continuous improvement process - how are faculty supported to achieve goals and redress any unsatisfactory or insufficient performance
- The outcomes reporting process - are overall anonymized department results summarized and/or made available in some form to the college, academic affairs, or campus community?

For faculty to obtain a satisfactory level of confidence, consistency and fairness in the teaching review process, the review team recommends clarification of this process by addressing the suggested points listed above.

F. Support (Staff, Administration, Facilities, Equipment, and Library)

Areas of Strength

The review team commends the MIS program for its use of department, school and university resources to meet the mission and goals of the program. Classes are held in computer labs where students can learn in a hands-on environment. The hardware in the labs has been recently upgraded. In 2018, the Innovation Lab was established with 3D printers and laser engraving printers. The department has access to its own virtual lab where students can work on virtual machines. The hardware was recently upgraded using money from an Academic Resources & Computing Committee (ARCC) grant. In the future, greater access to virtual labs is being made possible via the University Virtual Labs that has been strategically funded.

Patrick Leavitt has been assigned to provide technology support to the GSBE by campus technology services. Patrick reports that much of his effort is dedicated to systems that support the MIS department. Faculty reported a great working relationship with Patrick. Patrick reported good support and backup from campus technology services.

Nancy Tolman serves as the administrative specialist for the MIS department. Nancy reported a great working relationship with the faculty and noted how self-sufficient they are using the University systems. Within the department a great working relationship exists between the Supply Chain Management program and the MIS program. Such collegiality has facilitated everyone getting adequate support resources.

Areas for Improvement

We recommend the department consider hiring one or more students as support staff to help manage the physical and virtual lab environments. While Patrick is managing perfectly well, a student could benefit greatly from learning in such a relevant work environment. Patrick could use any freed-up time in resource planning or continuous education.

G. Relationships with External Communities

Areas of Strength

The review team notes several areas of strength with respect to the program's relationships with external communities:
- The MIS Advisory Board was founded in Fall 2018, with 11 representatives from local and national companies. As of the time of the program review, the board had met with faculty two times, and had discussed program assessment, curriculum, student internships, hiring support, and guest speakers in the classroom. Although this board is in its nascency, the review team commends the program for its formation in response to the feedback from the prior review team, and believes it will continue to benefit the faculty and students in the areas mentioned.
- Faculty members have partnered with external organizations in various ways, including coordination of visits with foreign government officials, partnerships with overseas universities, industry presentations and news interviews, and creation of personal protective equipment in response to COVID-19. These activities demonstrate the faculty's commitment to community outreach, and elevate the status and recognition of the MIS program.
- The MIS program has a very impressive relationship with the Master of Information Systems Management (MISM) program at Carnegie Mellon University, one of the premier institutions of MIS in the U.S. Over the past two years, a total of 14 Weber MIS graduates were accepted into the MISM program, and 15 were accepted into the CMU summer internship program, representing approximately 25% of the total number of students admitted into these programs. The program is to be commended for nurturing this relationship and preparing students for this rigorous and prestigious graduate program.

Areas for Improvement

- *Connecting activities to program mission*. Although the relationships established by faculty with various external constituencies are noteworthy, the self-study report does not clarify how these activities directly support the stated mission and objectives of the program. The review team recommends that faculty consider how and whether these activities contribute to the program's mission, and document this contribution.
- *Promoting diversity in student body*. As noted earlier, the MIS faculty are a small but diverse group. The team recommends that the faculty leverage this strength to better

recruit underrepresented populations, especially women. Currently females constitute 12.5% of MIS majors. The program should make a concerted effort before the next review period to increase this percentage (faculty expressed a desire to do this during our discussions).

H. Results of Previous Program Reviews

Areas of Strength

The review team notes several areas of strength regarding the program's response to the last program review.

- The program was rebranded from IS&T to the more widely used Management Information Systems (MIS) title.
- The MIS advisory board was founded in Fall of 2018 and held its first meeting in Spring 2019.
- Program-level learning outcomes were created and mapped to existing courses in 2018-2019.
- The program-level learning outcomes were assessed for the first time in 2019-2020.
- Exit surveys were sent to MIS graduates in 2019-2020.
- Courses MIS 3610, MIS 3620, MIS 4600, and MIS 4700 have been refocused to help students prepare for the Network+ and Security+ certifications.
- A capstone project was added to MIS 4730 creating an assessment that requires students to combine multiple topics from disparate areas to help students understand the alignment between IT and key business functions. This course helps prepare students to take the CAPM exam.

Areas for Improvement

Some recommendations from the last program review have not been implemented and should still be considered.

- The specific recommendation to reevaluate the teaching of Java in the introductory programming course. The language Python was recommended for its broad application.
- The recommendation to establish a mechanism for reaching out to MIS alumni to collect data about salaries, promotions, and other forms for career advancement.
- The recommendation to hire an additional full-time faculty member is still applicable.