Weber State University
John B. Goddard School of Business & Economics
Business Administration: Information Systems & Technology

Review Team
Rohit Aggarwal, University of Utah
Daniel McDonald, Utah Valley University
Matthew Mouritsen, Weber State University
Jeffrey Proudfoot, Bentley University

Review Process
On March 23, 2017, the review team conducted an evaluation of the IS&T program in accordance with the institution's requirement to evaluate the program every 5-7 years. The evaluation process consisted of (1) reviewing an IS&T Self Study Report that was distributed to the review team prior to March 23, 2017, and (2) conducting interviews with numerous representatives and stakeholders of the program, including: Jeff Steagall (Dean, GSBE), Michael Stevens (Chair, Department of Business Administration), senior IS&T faculty, junior IS&T faculty, IS&T students, and administrative personnel for GSBE. The review team was charged with identifying and articulating the strengths, challenges, and weaknesses of the program and providing recommendations for the IS&T program's mission statement, curriculum, student learning outcomes and assessment, academic advising, faculty, support, relationship with external communities, and the results of previous program reviews. The review team's assessment of each of these areas is provided in the following sections.

A. Mission Statement
The mission statement of the IS&T program is as follows: *"The Information Systems and Technologies degree prepares job-ready graduates by providing outstanding instruction in current information technologies, integrating practical business and technical knowledge, and promoting strong communication skills and effective team work."*

The review team **commends** the program for providing a clearly-defined education program that enables graduates to achieve the mission[ac]. The review team perceives this objective to now be a strength of the program as IS&T faculty have recently reduced the number of prerequisites within the program *and* reduced the number of hours required for graduation. These changes have resulted in a path to graduation that is streamlined and more feasible considering course scheduling limitations and other constraints. Additionally, the review team perceives the expected outcomes of the program to be clearly defined and appropriate[aa] and the team does not see any incongruence between the mission statement of the IS&T program and the mission statements of the department, Goddard School, and university[ad].

However, the review team is concerned with the ability of the IS&T program to provide evidence of learning assessments being met[ab] (Appendix F in the IS&T Self Study Report) as the results of the Appendix F assessment indicate that many of the IS&T mission statement objectives may not be satisfied. For example, it is clear in Appendix F that students have demonstrated proficient communication skills (based on the threshold of evidence of student learning and the findings linked to learning outcomes); this coincides with the final clause of the IS&T mission statement. However, based on the threshold of evidence of student learning and the results of findings in

FA2015 and SP2016, less than half of students met or exceeded the 80% threshold for knowledge of concepts. Furthermore, the assessment of effective team work in Appendix F indicates that the current assessment method was not considered to be meaningful, so there is currently no insight as to the state of whether this mission statement objective has been met. The team recognizes that the numerous changes made to both course offerings and prerequisites may have rendered the results of this prior assessment to be of marginal value. However, as it currently stands, the program is operating with little to no empirically-based insights regarding the effectiveness of the program regarding its stated mission. The review team recommends the following actionable strategies for ensuring that the expected outcomes of the program are achieved:

- The program is in the process of rolling out an exit survey for graduating students. The review team recommends adding open-ended questions (especially in conjunction with Q11, Q12, and Q13) to allow students to more specifically articulate why or why not the program delivered on the IS&T measurable learning outcomes.
- The review team also recommends a review of (with possible changes made to) the program's measurable learning outcomes. The review team was uncertain as to why "Knowing how to train people to use complex computer systems" would be a learning outcome for an undergraduate student (at an undergraduate level, students are typically focusing on their own mastery of these systems and not instructing others on how to use them).
- The review team also recommends that the program should establish open communication channels with external parties that can serve as a feedback mechanism about whether graduating students have met these objectives (e.g., companies that have hired IS&T students, graduate schools that have accepted IS&T students, companies that have granted internships to IS&T students, etc.).
- The review team also recommends the inclusion of a capstone project to more thoroughly assess IS&T students' ability to combine topics from disparate areas of the program into a more unified application of IS&T concepts. This may also allow students to make intentional connections that bridge the business core curriculum with IS&T courses, thus helping students understand the alignment between IT and other key business functions.
- Finally, the review team recommends that the program establish a mechanism for reaching out to IS&T alumni to collect data about salaries, promotions, and other forms of career advancement over time. Doing so would allow for a more longitudinal perspective of how well mission statement objectives have been met and how achieving these objectives impacts career performance over time.

B. Curriculum

The review team ***commends*** the efforts of the IS&T program to update its course offerings and streamline prerequisites; these efforts represent a deeper/more thoughtful approach to managing the curriculum of the program. The review team perceives that the program has generally demonstrated thoughtful curriculum planning[ba] and that the curriculum offered is consistent with the program's mission[bb]. The review team also commends recent efforts to develop new IS&T minor offerings in conjunction with other programs in the university (e.g., computer science). It is the team's understanding that these newly-formed partnerships represent a novel approach that is not a norm for the university. As IS&T course enrollments are generally under

the course cap thresholds, these new minor offerings represent an opportunity to increase enrollments and recruit prospective IS&T majors without increasing the number of sections required, and consequently, the burden on IS&T faculty (i.e., there will not be a need to add new sections of any IS&T courses in response to the new IS&T minor initiative).

However, there are specific concerns regarding the design, implementation, and marketing of the (1) business analytics and (2) enterprise systems courses. It is our understanding that contributing factors adversely affecting the low enrollments (and other undesirable outcomes) of both courses include a lack of marketing/promotion in other IS&T courses and a possible deviation of course curriculum from the more dynamic and applied/software-heavy pedagogical model used in other IS&T courses. The review team identifies both the business analytics and enterprise systems courses as being (1) highly relevant to the mission of the IS&T program and (2) necessary to remain competitive and consistent with the course offerings of most information systems programs. The review team recommends the following actionable strategies for ensuring that the curriculum offered by the IS&T program demonstrates thoughtful curriculum planning that is consistent with the program's mission:

- The review team strongly recommends maintaining the analytics and enterprise systems courses as a part of the IS&T curriculum.
- The review team also recommends reaching out to university and industry contacts to identify the software, tools, and platforms (e.g., utilizing the ERPsim SAP distribution game in the enterprise systems course) that would be most relevant and engaging for conveying important concepts to students. IS&T faculty can reach out to Jeffrey Proudfoot for additional information and resources in response to this recommendation.
- The review team also makes the very specific recommendation of evaluating the program's current emphasis on teaching JAVA; Python may be a better alternative (especially considering the use of Python for countless applications relevant to the program, especially security).

Additionally, the review team has identified a concern regarding the appropriate allocation of resources for curriculum delivery that is consistent with the mission of the program and the number of graduates[bc]. Based on the statistics provided in the IS&T Self Study Report, the department is currently leveraging a substantial number of adjuncts to satisfy IS&T teaching needs. Furthermore, the current summer offerings provided by the IS&T program are extremely limited and may not support the expectation that major/minor/general education/service programs be offered on a regular basis to ensure students are able to complete graduation requirements in a timely manner[bd]. Such a restricted summer schedule may inhibit students' success (and possibly, reduce interest in selecting IS&T as a major or minor thereby decreasing enrollments).

- The review team strongly recommends hiring an additional full-time faculty member to provide a longer-term solution for staffing IS&T courses (preferably someone with expertise in delivering either analytics or enterprise systems content) and expanding the ability to increase course offerings in the summer.

C. Student Learning Outcomes and Assessment

The review team **commends** the IS&T faculty for their clear dedication to students' learning. The program curriculum appears to be focused on two core areas: security and networking. It was extremely evident during the review team's meeting with students that the IS&T program is developing students who are competent, motivated, and experienced in these areas (students often have at least one internship, and in some cases, more). One student interviewed by reviewers is preparing to enter a graduate program at Carnegie Mellon University while another is expecting a permanent position at a healthcare provider where he is currently working as an intern. These student outcomes are on pace with MIS student outcomes at the other major competing universities in the region. However, while these success stories are encouraging, they are merely higher-level anecdotal evidence that learning outcomes are being achieved at a more granular level. It is the review team's assessment that direct evidence of these lower-level learning outcomes (and related assessment methods) being achieved are currently lacking.

The set of criteria defined by the program for evaluating Standard C include the following elements (paraphrased for brevity):

- Learning <u>outcomes</u> should: describe critical knowledge, skills and behaviors[ca]; support the goals of the program and the constituencies served[cb]; and be directly linked to the program's curriculum[cc].
- The <u>assessment process</u> consists of: clearly defined and applied assessment measures[ca], direct measures of learning associated with learning outcomes[cb], data to assess evidence of learning is gathered regularly[cc], measures are used in a systematic manner[cd], and assessment processes are used to improve and develop the program[ce].

The review team identified each specific item in Standard C as a current weakness of the program. This assessment is mostly due to the program's ongoing reliance on an evidence of learning assessment that is currently outdated relative to the revised course offerings of the IS&T program (Appendix F in the Self Study Report).

- The review team recommends updating this evidence of learning assessment to reflect current IS&T course offerings (learning outcomes outside of the IS&T program are currently evaluated at the business school level).
- The review team also recommends the inclusion of a capstone project as a part of the IS&T core to serve as an additional means of assessing learning outcomes across all relevant topics at the completion of the program.
- The review team also understands that IS&T faculty intend to incorporate project management and analytics as stronger emphases of the program. The review team recommends making it possible/feasible to take the CAPM after completing the relevant course(s). Furthermore, networking and security courses should be structured in such a way that completing Network+, Security+, and other certifications are reasonably attainable. Doing so is a clear demonstration of externally assessing skills taught in IS&T courses.
- The review team also recommends that student learning outcomes and assessments be developed with an eye to the unique nature of students in the program (e.g., many students take substantially longer than the typical four-year cycle to graduate from the university).

D. Academic Advising

The review team ***commends*** the IS&T program for their mentorship of IS&T students and their effective collaboration with academic advisors; this entire area was deemed a current strength of the program. It is the team's perception that the IS&T program has a strategy in place for advising students in both major and minor programs[da]. This is especially evidenced by the program's commitment to streamlining the course offerings and prerequisite structure to ensure that the path to graduation is not unnecessarily complex. The team also perceives that students receive ample assistance in planning programs of study[db]; this was evidenced during interviews with students based on their comments regarding support that they had received while working through the program. Finally, students are clearly receiving assistance in making decisions about graduate programs, internships, and job placements[dc]. The IS&T students interviewed by the team all had career trajectories that would be competitive/desirable at all types of institutions, including large state universities and smaller private schools.

However, while it is clear from the team's discussion with faculty and advisors that students are indeed receiving assistance as they progress through the IS&T program, the review team recommends the following actionable strategies for ensuring that the interaction between IS&T faculty, students, and advisors is maximally effective.

- The review team recommends requiring academic advising upon admission. While IS&T students appear to be guided effectively through the program once in it, all students interviewed by the team appeared to have serendipitously "happened" upon the IS&T program; they were not aware of its existence, mission, or course offerings when making preliminary decisions about their major. The team feels that the advising office can provide invaluable input to students regarding the IS&T program at an earlier point in time at which it is still feasible for them to select it as a major or minor. The department chair commented that a required advisor meeting may be feasible as a part of the 2899 course.
- The review team also recommends close collaboration with academic advisors in developing more rigorous data collection tools that can be used to inform the student recruitment process. For example, students submit a form to advisors to declare IS&T as a major. It would be both easy and meaningful to collect additional data about *why* students are selecting IS&T programs to identify trends and other insights that can be used to further improve recruitment efforts with other students.

E. Faculty

The review team ***commends*** the IS&T program for its cultivation of both professionally qualified[ec] and demographically diverse[ed] faculty. While the team did not receive explicit feedback about the systematic monitoring of teaching effectiveness[ef], the orientation of new faculty[ee], or the review processes in place to assess teaching[eh], there is no reason to believe that these areas are lacking (and confirmed successes in other areas of this standard implicitly suggest that these elements are also in good standing). The team did, however, identify areas of concern with the program maintaining a core of full-time faculty (1) to promote both stability and quality for degree programs offered[eb] and (2) to ensure appropriate teaching assignments and service workloads[ef]. As discussed previously in this report, the program's heavy reliance on adjuncts, and the need for some faculty to take on overloads, presents a weakness[ea], one which may be

detrimental to both ensuring quality, stability, and the long-term success of the program (especially of junior faculty seeking tenure). Additionally, it was brought to the attention of the review team that some junior faculty may be negatively impacted by uncertainties about the tenure process (especially with the pending merger between IS&T and SCM). It is possible that this uncertainty may be negatively impacting productivity and morale. Furthermore, other faculty appeared to be extremely concerned about the IS&T and SCM merger and the possible detrimental impacts (to resource availability, scheduling, hiring and promotion of faculty, etc.) that may follow with this reconfiguration of the business areas. Considering these assessments, the review team recommends the following actionable strategies to better manage faculty within the program.

- The review team again recommends that the program extend a line to hire a new full-time faculty member to help provide stability, reduce the heavy reliance on adjuncts, and reduce the need for existing faculty to take on excessive overloads.
- The review team also recommends a possible rotating department chair arrangement with SCM to quash any fears or uncertainties about possible negative outcomes associated with management, access to recourses, teaching loads and scheduling, faculty hiring and promotion, etc.

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

The review team (1) ***commends*** the IS&T program for their utilization of resources to meet the mission and goals of the program and (2) has rated each element of this standard as being in good standing. The review team did not uncover any evidence that the number and capabilities of the support staff are inadequate[fa]. Furthermore, there appears to be ample administrative support in selecting/developing staff[fb]. Finally, the facilities, equipment, and library clearly support the needs of the mission and goals of the program[fc]. In fact, the team was highly impressed with the virtual lab infrastructure that was deployed (and is currently managed) by IS&T faculty, a setup that at most institutions would be managed by several individuals. The virtual lab represents an invaluable resource for the program, especially considering the applied/software-intensive courses that are offered.

- The review team recommends the consideration of training/employing a support person to help manage the virtual infrastructure as not to overburden faculty in the long term.

G. Relationships with the External Communities

The review team ***commends*** the IS&T program on their efforts to engage with external communities (both within and external to the business area and the university). It is clear from the team's interactions with IS&T students and faculty that the relationships that have been cultivated between the program and external graduate programs/companies are valued. However, the review team perceives that the formal relationships between the program and external communities[ga] (including those within the university and business area) may need further refinement. The review team also identified the lack of an external advisory committee[gc] to be a continuing weakness of the program (especially as the formulation of an advisory committee was recommended by a previous review team). Finally, the review team is also concerned with the IS&T program and its current/future relationships with other business programs. It is the team's understanding that there is an impending merger between the IS&T program and the SCM

program. Both junior and senior IS&T faculty members expressed potential concerns about this new alignment, especially regarding curriculum, equipment, faculty hiring/promotion, budgets, etc.[gb]. Considering these weaknesses/concerns, the review team recommends the following actionable strategies for improving the IS&T program's relationships with external communities.

- The review team recommends more formal and systematic promotion of the department both within the Goddard School as well as with other areas of the university (i.e., advisors outside the Goddard School, particularly those who advise freshman and sophomore students). While the high quality of many courses in the program are increasing interest and enrollments, there exists an opportunity to enhance recruiting processes by informing many more students about the program, its mission, and its offerings.
- The review team also recommends a possible rebranding of the program from IS&T to the more widely-used Management Information Systems (MIS) title. Doing so would provide a unique opportunity for a more far-reaching effort to inform external communities about the program.
- The review team also recommends the use of relationships with alumni and current students to recruit new students to the program. This recommendation is based specifically on the effective use of this practice at the University of Utah by Rohit Aggarwal; he can be contacted for additional information about this effort.
- The review team also recommends that the IS&T program seek transparency with administrators about the pending merger with the SCM program as the current uncertainty about this arrangement is causing consternation with IS&T faculty. Furthermore, to avoid any concerns about a lack of control within this new arrangement, the review team again recommends suggesting a rotating department head assignment that would switch from IS&T to SCM every two or three years.
- Finally, the review team recommends the formulation of an advisory committee to help guide the evolution of the program, its mission, and curriculum. The team specifically recommends seeking involvement from the program's contact at Carnegie Mellon University who may have critical insights as to the evolution of curriculum for the program over time.

H. Results of Previous Program Reviews
The review team's evaluation of the previous program review found that the IS&T program has yet to respond to the recommendation to (1) formulate an advisory board and (2) update learning outcomes. Please refer to the team's recommendations on each of these areas in Standards G and C, respectively.