MS in BIS Assessment Report

April 1, 2017

Members of the MS in BIS Assessment Committee for the 2016-2017 academic year:
Janet Bailey
Sarah Clements
Sung-kwan Kim
Richard Kumi
Robert Mitchell
Ravi Thambusamy
Richard Woolridge

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	1.2 Students will demonstrate data manipulation language skills.	Assessed in BINS 7305, using exam, case analysis, or project; assessed spring, 2016.
	1.3 Students will apply project management techniques.	Assessed in BINS 7353, using project; assessed spring, 2016.
GOAL 2: To leverage information technology for business solutions at the strategic, tactical, and operational levels in a global environment.	2.1 Students will leverage the use of emerging technologies to solve a business problem or capitalize on an opportunity.	Assessed in BINS 7350, using project; assessed spring, 2016.
	2.2 Students will critically analyze the strategic use of IT solutions to their constituents.	Assessed in BINS 7309, using project; assessed fall, 2015.
Goal 3: To develop individual and group communication competencies needed in a multifaceted IT environment.	3.1 Students will articulate in writing an IT solution to a business problem/ Opportunity.	Assessed in BINS 7304, 7308, 7309, or 7353, using case analysis or project; assessed spring, 2016.
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Goal 4: To apply an ethical framework in decision making.	4.1 Students will identify an ethical dilemma and the impact on identified stakeholders.	Assessed in BINS 7350, using a case analysis; assessed spring, 2016.
	4.2 Students will analyze alternative actions and consequences based on an identified Ethical Rule or Model.	Assessed in BINS 7350, using a case analysis. Assessed spring 2016.
Goal 5: To develop an integrated understanding of the IT field.	5.1 Student will demonstrate knowledge of select knowledge areas of IT.	Assessed through the MS in BIS Program Review Exam; exam administered yearly in BINS 7353.

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Curriculum Management Implication and Actions

MS in BIS Program Review
The BIS faculty completed a review of the content of the MS in BIS degree during 2016-2017 based upon a survey of graduates and a focus group meeting composed of employers and program alumni. All BIS advisory board members were asked to review the program and participate in the focus group meeting. Approximately 70% of members did contribute.

Appendix D provides as summary of recommended program content identified as needed to complement the current program—many items identified are already integrated into the curriculum. The document identifies curricular changes/additions that have been implemented based on this program review.

In reviewing the findings, the BIS Advisory Council discussed potential focus changes for the program. The group concluded that any additional course additions/curriculum innovations should relate to Business Analytics. Recommended actions for 2017-2018 include the following:

- Review the content of BINS 5351, 7304, and 7309 to identify appropriate coverage of analytics tools; integration of prescriptive and predictive techniques and text analysis, and unnecessary overlap of course content.
- Identify problem-solving project appropriate for each course.
- Evaluate relevance of analytics tools being used; for example, should use of Hadoop be integrated to replace/complement SQL Server?

Curriculum Content Evaluation
The BIS faculty reviewed the MS in BIS course mapping completed in 2016-2017 (see Appendixes A, B, C) in identify needed curricular changes. Assessment goals/objectives were reviewed in relation to findings of Program Review (focus group findings in Appendix D): Learning Outcome

- Objective Emphasis
    - No Emphasis
    - Limited Emphasis: incorporation into coverage of other topics with no direct focus or activities
    - Moderate Emphasis: distinct topic for some discussion and/or limited activities
    - Substantial Emphasis: focal point of course coverage including significant assignments and/or testing
- Student Behavior
    - Remember/Recall information (tell, list, define)
    - Explain/Describe concepts (discuss, compare, demonstrate)
    - Apply in a new context (solve, interpret)
    - Identify component ideas or alternatives (examine, compare, differentiate)
    - Justify/Defend an application/decision based on evidence (assess, critique, defend, justify)
    - Participate in collaborative task completed in team
    - Design/deliver persuasive oral presentation

    - Develop written document
- Example Content Coverage
- Learning Activity/Student Deliverable

2016 Assessment Results

As reflected in the report, the varied artifacts were assessed by multiple reviews using the attached rubrics to promote inter-rater reliability. All BINS faculty participated in the assessment process. Two faculty members were assigned to each goal/each objective to assess. Findings were discussed with all BINS faculty. The outcome will be posted on the web and will be shared by students and business partners.

Comprehensive Program Review Exam: A department exam (content validated) was used to assess IT-related knowledge. The overall exam score average has fluctuated over the last four years, though new topics of evaluation were added in 2015 (76%, 2013; 60%, 2014, 67%, 2015, 52%, 2016). 2016 analysis revealed that the goal of 60% performance was met in Systems Analysis and Design (78%), Database (81%), and IT Strategy (66%). The results were comparable to last year; the overall exam score was impacted by a couple outliers. Improvement was seen in knowledge areas related to Database and IT Strategy.

Recommended Curriculum Management Practices:

1. Demonstrate Data Manipulation Language Skills (1.2):
    a. Goal of >=75% of students scoring acceptable or exemplary was met.
        i. In the criterion relational model (concepts), 80.8% of the students were exemplary or acceptable; in data definition, 100% of students were exemplary or acceptable; and in data manipulation, 92.3% of the students were exemplary or acceptable.
    b. The change in instructional approach (documented in previous assessment) to provide experiential exercises and problem-solving cases has resulted in increased performance on this measure.
2. Apply Project Management Techniques (1.3):
    a. Goal of >=75% of students scoring acceptable or exemplary was met.
        i. On the criterion plan tasking, 100% of students were exemplary; task understanding, 80% acceptable; plan mechanics, 60% exemplary.
    b. Again, this assessment cycle, high performance was observed.
    c. The change in instructional approach (documented in previous assessment) to provide increased emphasis on project plan taking, task understanding, and plan mechanics is reflected in high scores.
3. Leverage Use of Emerging Technologies to Solve a Business Problems or Capitalize on an Opportunity (2.1):
    a. Goal of >=75% of students scoring acceptable or exemplary was met.
        i. On the criterion identifies technologies, 86% of teams were exemplary; identifies managerial considerations, 57% exemplary; justifies potential value, 57% acceptable; applies frameworks/theories, 57% acceptable.

        ii. **Performance increase was shown, especially in identifies technologies criterion.**
    b. **The integrated multi-step process for project completion (increasing student-faculty interaction throughout project development) was successful in improving student performance.**
4. Articulate in writing an IT solution (3.1):
    a. Goal of >=75% of students scoring acceptable or exemplary was met.
    b. Major weaknesses identified in 2015 were no longer evident (document organization/coherence; grammar/mechanics remains lowest score, though number of international students increased from 46% to 54% of sample.
    c. New report writing metric is being integrated throughout classes to enhance further student writing ability.
5. Identify an ethical dilemma and analyze alternative actions consequences (4.1/4.2):
    a. Goal of >=75% of students scoring acceptable or exemplary was met.
    b. **Scores revealed exemplary performance on three of four criterion: dilemma, stakeholder, alternatives.**
    c. The Analytical Thinking and Ethical Decision Making metrics will continue to be used throughout the curriculum.
6. Based on IT Exam results
    a. Introduce/emphasize Styles of Leadership and Leadership models in MGMT 7312.
    b. Emphasize IT issues in the section of ACCT 7304 for IT majors.

Actions Based on Curricular Changes Recommended in 2015:

1. Students are being provided quality samples of modeling techniques in BINS 7307 (1.1).
2. Throughout program student projects are requiring that problem analysis/solution is focused on a particular audience. Requirements include a directed analysis with persuasive justification of recommendations (2.2).
3. A report writing metric is being integrated into curriculum to direct students to use a standardized writing approach based on best practices (3.1).
4. Leadership and motivation models are being integrated into the content of MGMT 7312 (5).

Results Disseminating to Stakeholders:

One April 17 summary results of assessment were shared for input with BIS Advisory Council.

GOAL ASSESSMENT: 1.1

Goal 1: To apply technical competencies in business applications development

(1) OBJECTIVE: Students will demonstrate analysis and modeling techniques.

Date: Fall 2015
Course: BINS 7307
Students: 15 students

Exams in BINS 7307 were used to assess the following:

1. Ability to analyze the high level user requirements using the use case model
    a. Identification of actors
    b. Analysis of the interaction of the system with actors
2. Ability to analyze and design the components of the system using the class model
    a. Identification of the classes and their relationships
    b. Analysis and design of data and process requirements of the classes
3. Ability to analyze the internal behaviors of the system using the sequence diagram
    a. Identification of the objects involved in the scenario
    b. Identification of the processes and their sequences

The assessment was performed by two BIS faculty members using the system analysis and design rubric.

Analysis

	Average Rating (0-5)
Use Case Model	4.0
Use of Class Model	3.2
Use of Sequence Diagram	2.7

Goal of >=75% of students scoring acceptable or exemplary was met.

SYSTEM ANALYSIS AND DESIGN

	Unacceptable (0-1)	**Acceptable** (2-3)	**Exemplary** (4-5)
Ability to analyze the high level user requirements using the use case model			
- Identification of actors	The actors of the system are not appropriately identified. Use of the modeling technique is not correct.	Most actors are identified. Use of the modeling techniques is accurate with minor errors.	All actors of the system are identified. Use of the modeling technique is correct and accurate with few or no errors.
- Analysis of the interactions of the system with actors	Use cases are not correctly analyzed and the modeling techniques are not correctly applied	Most use cases are identified and analyzed with minor errors. The modeling techniques are well applied with minor errors.	All use cases are correctly analyzed and the modeling techniques are applied with few or no errors.
Results Fall 2015		4/15 = 27%	11/15 = 73%
Ability to analyze and design the components of the system using the class model			
- Identification of the classes and their relationships	Classes are not correctly identified. Their relationships are not correctly identified and poorly designed.	Most classes are correctly identified. Most of their relationships are properly established with minor error.	All classes required are correctly identified. Their relationships are properly established with few or no errors.
- Analysis and design of data and process requirements of the classes.	Data and processes are not correctly identified and designed. Major violation of the analysis and design principles.	Most of data and process requirements are correctly identified and designed with minor errors.	All data and process requirements are properly identified and designed with few or no errors.
Results Fall 2015	1/15 = 7%	9/15 = 60%	5/15 = 33%
Ability to analyze the internal behaviors of the system using sequence diagram			
- Identification of the objects involved in the scenario	The objects involved in a scenario are not correctly identified.	Most objects involved in a scenario are identified with minor errors.	All objects involved in the scenario are properly identified with few or no errors.
- Identifications of the processes and their sequences	The processes and their sequences are not correctly identified and ordered. Major violation of the analysis and design principles.	Most processes and their sequences are properly identified and ordered with minor errors.	All processes and their sequences are properly identified and ordered with few or no errors.
Results Fall 2015	3/15 = 20%	8/15 = 53%	4/15 = 27%

In overall, students demonstrated the acceptable level in applying the major object-oriented models to system analysis and design. Especially, the performance in the use of “use case model” for analyzing the system requirements is noteworthy. An average rating of 4 (exemplary) was demonstrated in the use of the model.

The score for the use of “sequence diagram” was lower (2.7) than those for other two areas. Even though it is satisfactory, there is a room for improvement. One possible explanation is that the model is created at the lower level (at the object level) while other two models are created at the high level (use domain or class level). That means the use of “sequence diagram” requires the understanding of more implementation details. It can be a little more difficult to some of the students, especially for those without much IT background.

Recommendations

1. Continue to provide more opportunities for practicing the models (e.g., more hands-on exercises and case studies).
2. Increase the coverage of sequence diagram. Also provide an alternative modeling approach to sequence diagram (e.g., communication diagram). The two models actually achieve the same goal but student have more options.
3. Provide the examples of good models from the past projects in order to avoid common pitfalls.

GOAL ASSESSMENT: 1.2

Goal 1: To apply technical competencies in business applications development

(2) OBJECTIVE: Students will demonstrate data manipulation language skills.

Date: Spring 2016
Course: BINS 7305
Students: 26 students

Student exams from BINS 7305 Advanced Database Management System taken in the spring semester 2016 were collected for the analysis. The following factors were assessed:

1. Understanding of the key concepts of the relational model
    - Data integrity (i.e., entity, key, referential and semantic integrity)

2. Ability to use SQL for data definition
    - Table creation, integrity constraint specification

3. Ability to use SQL for data manipulation
    - Data retrieval from a single table
    - JOIN
    - Sub-query
    - Group functions

Students' performance was evaluated by a group of faculty members (who teach database courses).

Analysis

The metric of >=75% achieving Acceptable or Exemplary was met on all three factors of evaluation.

Overall, students achieved acceptable level of competency. In the area of relational model (concepts), 80.8% of the students were exemplary or acceptable (38.5% and 42.3% respectively). In the area of data definition, all students were exemplary or acceptable (84.6% and 15.4 respective). In the area of data manipulation, 92.3% of the students were exemplary or acceptable (53.8% and 38.50% respectively).

Actions Recommended

The "hands-on" oriented approach turns out to be very effective method. Continue to provide hands-on exercises and problem solving opportunities (e.g., cases).

Data Manipulation Evaluation

	Unacceptable (0–1 pt.)	Acceptable (2–3 pts.)	Exemplary (4-5 pts)
Relational model	Able to explain the key concepts of relational data structure (e.g., relation, PK, FK, tuple, attribute, cardinality, degree)	Able to explain • Level I + • More relational concepts (e.g., CK, AK, domain etc.) • Entity and referential integrity	Able to explain • Level II + • Various semantic integrity constraints
Results Sp2014 Sp2016	2/14 = 14% 5/26 = 19%	3/14 = 22% 11/26 = 42%	9/14 = 64% 10/26 = 39%
SQL for Data Definition. (Write DDL statement to define table structure)	Able to write SQL DDL for creating basic table structure	Able to write SQL DDL for • Level I + • Implementing various integrity constraints (e.g., entity integrity and referential integrity)	Able to write SQL DDL for • Level II + • Various semantic integrity • Improving performance(e.g., index design)
Results Sp2014 Sp 2016	3/14 = 22% 0/26 = 0%	2/14 = 14% 4/26 = 15%	9/14 = 64% 22/26 = 85%
SQL for Data Manipulation. (Write DML statement to support data retrieval)	Able to create SQLDML for simple data retrieval from a singlet table; limited capability in handling SQL statement involving multiple tables or complex queries (e.g., subqueries, aggregate functions)	Able to write SQL DML for most cases without errors; may show difficulty in solving very complex cases	Able to write SQL DML for all cases without any errors or with a few minor errors, if any.
Results Sp2014 Sp2016	1/14 = 7% 2/26 = 8%	7/14 = 50% 10/26 = 38%	6/14 = 43% 14/26 = 54%

GOAL ASSESSMENT: 1.3

Goal 1: To apply technical competencies in business applications development

(3) OBJECTIVE: Students will apply project management techniques.

Date: Spring 2016
Course: BINS 7353
Students: 26 students assigned to 5 teams

Teams of graduate project management students were required to manage undergraduate business consulting projects over the course of a semester. The undergraduate projects were service learning projects where teams of students consult with local small businesses. These projects were evaluated to assess student's ability to manage project planning, execution, and adaptation. This measurement reviews their final project plan based on three criteria: plan tasking, task understanding, and plan mechanics.

The first criterion is plan tasking that demonstrate that the student understands each of the stages of a project and can apply that understanding to create the appropriate tasks (based on the submitted project plan file). The second criterion is task performance that demonstrates task understanding, which includes descriptions of how the stages were performed or will be performed. The third criterion is plan mechanics that demonstrates the appropriate utilization of subtask, predecessor, and date appropriateness.

Project Management Analysis:

Construct Assessed	**Unacceptable (Not Yet Complete) (0-1 pt)**	**Acceptable (2-3 pts)**	**Exemplary (4-5 pts)**
Plan Tasking	Students have limited understanding of what tasks are required in project plan stages.	Students followed instructions and created a plan that meets the requirements.	Students went beyond instructions and created a customized plan that demonstrates understanding of what tasks are required.
Results S2014 S2016	0/14 = 0% 0/26 = 0%	12/14 = 86% 0/26 = 0%	2/14 = 14% 26/26 = 100%
Task Understanding	Students have limited task understanding.	Students followed instructions and created task deliverables that meets the requirements.	Students went beyond instructions and created customized deliverables that demonstrates task understanding.
Results S2014 S2016	1/14 = 7% 0/26 = 0%	9/12 = 64% 21/26 = 80%	2/12 = 29% 5/26 = 20%

Plan Mechanics	Students have limited understanding of plan mechanics.	Students followed instructions and created a plan that meets the plan mechanics requirements.	Students went beyond instructions and developed plan details that demonstrate understanding of plan mechanics.
Results S2014 S2016	0/12 = 0% 0/26 = 0%	9/12 = 79% 10/26 = 40%	3/12 = 21% 16/26 = 60%

Analysis
100% achieved acceptable or exemplary on all criteria.
100% achieved exemplary on Plan Tasking.
80% achieve exemplary on Task Understanding.
60% achieved exemplary on Plan Mechanics.

Desired student outcomes were achieved.

Prior assessment had resulted in:

- **More hands-on in class assignment time be spent on project plan tasking, task understanding, and plan mechanics.**

Increased student achievement results.

GOAL ASSESSMENT: 2.1

Goal 2: To leverage information technology for business solutions at the strategic, tactical, and operational levels in a global environment.

(1) OBJECTIVE: Students will leverage the use of emerging technologies to solve a business problem or capitalize on an opportunity.

Date: Spring 2016
Course: BINS 7350
Students: 7 Teams (22 students)

Teams of students completed a complex analysis of emerging technologies that would provide competitive advantage/value. The project required analysis of the corporate market relating to industry positioning, information systems architecture/infrastructure, cultural impact, projected financial value, business process improvement, and implementation implications (security, scalability, standardization, time frame). The project is completed in a team environment to provide collaboration of students with experience in different industry types.

Assessment: IT Decision Making

TRAIT	Unacceptable (0-1 pt.)	Acceptable (2-3 pts.)	Exemplary (4-5 pts.)
Identifies emerging technologies related to identified process improvements and competitive advantage	Demonstrates limited understanding of emerging technologies that can improve identified process(es) and competitive advantage	Demonstrates a basic understanding of the technologies that can improve identified process(es) and competitive advantage including identification of impact	Demonstrates in-depth understanding of the technologies that can improve identified process(es) and competitive advantage and provides a detailed description of the impact on identified technology on processes and competitive advantage
Results Sp2014 Sp2016	2/6 = 33% 0/7 = 0%	0/6 = 0% 1/7 = 14%	4/6 = 67% 6/7 = 86%
Identifies managerial considerations for assessing technologies	Identifies only some important managerial considerations	Identifies important managerial considerations for assessing technologies	Identifies important and less obvious managerial considerations reflecting a thorough understanding of the options
Results Sp2014 Sp2016	1/6 = 17% 0/7 = 0%	1/6 = 17% 3/7 = 43%	4/6 = 67% 4/7 = 57%

Justifies the potential value of recommended technology to identified stakeholders Results Sp2014 Sp2016	Has difficulty identifying stakeholders and analyzing impact of technologies on stakeholders 1/6 = 17% 0/7 = 0%	Identifies major stakeholders and provides limited analysis of value of technology to those stakeholders 1/6 = 17% 4/7 = 57%	Identifies all stakeholders impacted and provides an in-depth evaluation of technology with detailed value analysis to stakeholders 4/6 = 67% 3/7 = 43%
Applies appropriate frameworks and theories, such as Resource Based View of the firm and Business-IT Maturity Model Results Sp2014 Sp2016	Demonstrates limited understanding of applicable theories and frameworks 1/6 = 17% 0/7 = 0 %	Demonstrates basic understanding of applicable theories and frameworks and how they can be used to select appropriate technologies 1/6 = 17% 4/7 = 57%	Demonstrates in-depth understanding of applicable theories and frameworks by providing a detailed analysis of how they demonstrate value of the selected technologies 4/6 = 67% 3/7= 43%

Analysis

The metric of >=75% achieving Acceptable or Exemplary was met on all four factors of evaluation. Improvement in performance from 2014 was achieved.

Differences in scores related to student effort/depth of analysis and possible misunderstanding of project requirements.

Recommendation

To continue revised project completion process: that students be required to submit a one-page proposal for approval prior to beginning analysis and submit progress reports during project development.

NOTE: The revised project completion process has resulted in improved student performance.

GOAL ASSESSMENT: 2.2

Goal 2: To leverage information technology for business solutions at the strategic, tactical, and operational levels in a global environment.

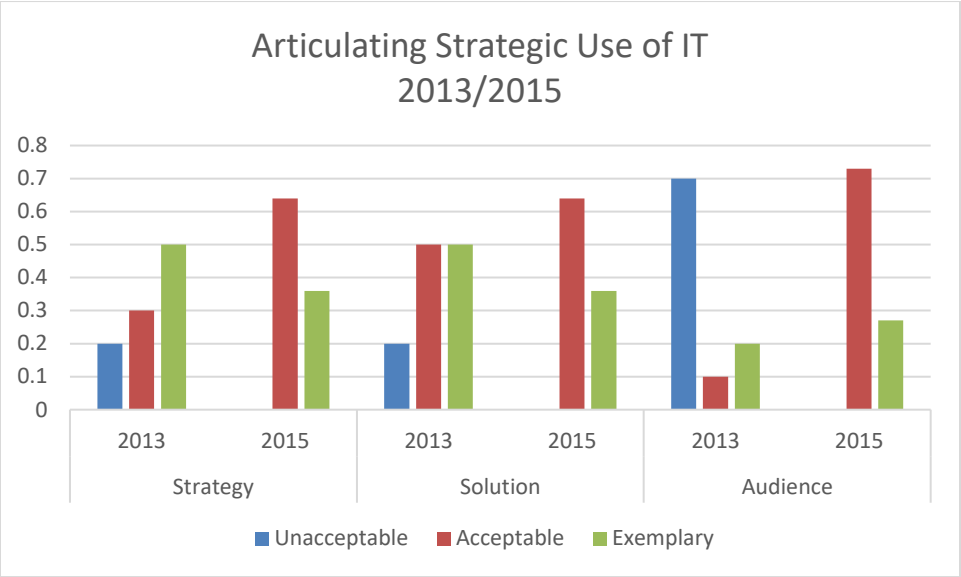
(2) OBJECTIVE: Students will critically analyze the strategic use of IT solutions to their constituents.

Date: Fall 2015
Course: BINS 7309
Students: 11 Teams (43 students)

Teams of students completed a complex analysis of emerging technologies that would provide competitive advantage/value. The project required analysis of the corporate market relating to industry positioning, information systems architecture/infrastructure, cultural impact, projected financial value, business process improvement, and implementation implications (security, scalability, standardization, time frame). The project is completed in a team environment to provide collaboration of students with experience in different industry types.

Assessment: IT Decision Making

	Unacceptable (0-1 pt.)	Acceptable (2-3 pts.)	Exemplary (4-5 pts.)
Strategy	Vague or no statement of strategy	Statement of strategy but no stated or vague statement of outcome	Strong statement of strategy and outcome
Results Fall 2013 Fall 2015	2/10 = 20% 0/11 = 0%	3/10 = 30% 7/11 = 64%	5/10 = 50% 4/11 = 36%
Solution	Vague statement of solution	Statement of solution but no details or vague description of fit to strategy	Overall description of solution and describes how details of solution fit details of strategy
Results Fall 2013 Fall 2015	2/10 = 20% 0/11 = 0%	5/10 = 50% 7/11 = 64%	3/10 = 50% 4/11 = 36%
Audience	Strategy and solution description are inappropriate for audience or audience is unclear	Strategy and solution description are sufficient but not compelling for audience	Strategy and solution description are appropriate and compelling for audience
Results Fall 2013 Fall 2015	7/10 = 70% 0/11 = 0%	1/10 = 10% 8/11 = 73%	2/10 = 20% 3/11 = 27%



Analysis

The metric of 100% achieving Acceptable or Exemplary was met on all three factors of evaluation. One-third of students scored exemplary on the first two factors and about one-quarter scored exemplary on the third factor.

The papers did not seem to have a consistent audience, based on writing style, in all the reviewed papers. A similar finding occurred in 2013, however, some improvement was noted.

Recommendation

1. Assure the report directly responds to the factors being assess. Providing a rubric identifying areas of evaluation would guide students in directly addressing the issues. Writing needs to be very direct; a design should be used that highlights these major analysis components.
2. A specific audience should be identified; the report issues should communicate directly to that audience. Rather than a descriptive analysis, students should use a persuasion to justify their solutions.
3. A report/case analysis metric should be designed to guide writing toward persuasive analysis.

GOAL ASSESSMENT 3.1

Goal 3: To develop individual and group communication competencies needed in a multifaceted IT environment.

(1) OBJECTIVE: Students will articulate in writing an IT solution to a business problem/opportunity.

Date: Spring/Summer 2016
Course: BINS 7350
Students: 13/21

Case analyses (Ethics) written in BINS 7350 were evaluated by two faculty members. Analyses were reviewed based on the rubric used to evaluate writing across the curriculum.

Average Rating on each Criteria: Met goal of >=75% of students scoring acceptable or excellent.

	2015	2016
Organization	3.46	3.92
Content	3.69	3.85
Writing Style	3.39	3.39
Grammar/Mechanics	3.46	3.23
Format	3.31	3.92

No curricular changes were recommended.

Student performance continues to meet established goal. In 2015 46% of sample were international students, in 2016, 54%. Performance reflects value in using communication metrics and emphasis on communication skills throughout the curriculum.

The following problems identified in 2015 were no longer major issues:

Organization

- Report coherence often lacking, no evidence of strong structure.
- Reports should be organized through use of captions (action-oriented, summative).

Format

- Use of templates would improve readability and credibility.
- Violations of APA guidelines (in-text citations, references) frequent.

Written Communication

Criteria	Unacceptable (0-1 pt.)	Acceptable (2-3 pts.)	Excellent (4-5 pts.)
Organization Results SpSu2015 2016	Incorrect approach used; with ineffective introduction, body, and/or closing; lack of transitions between sections.	Correct approach used, with logical flow and acceptable transitions between sections. 7/13 = 54% 4/13 = 31%	Clear and logical sequence; effective introduction, body, and closing, considering direct, indirect, or persuasive approach. Effective transitions between sections. 6/13 = 46% 9/13 = 69%
Content Results SpSu2015 2016	Inadequately addressed the topic with major deficiencies in depth of information and quality of analysis.	Adequately addressed the topic with some deficiencies in depth of information and quality of analysis. 5/13 = 39% 6/13 = 46%	Addressed all relevant aspects of the topic with a clear, concise, and accurate presentation of information with appropriate analysis. 8/13 = 61% 7/13 = 54%
Writing Style Result SpSu2015 2016	Used ineffective writing style, with many uses of negative and offensive word choice, confusing and inappropriate expressions; violated you viewpoint; weak sentence and paragraph structure.	Used clear writing style with a few uses of negative, offensive language, clichés, jargon; violated you viewpoint. Acceptable paragraph and sentence structure. 5/13 = 39% 7/13 = 54%	Used clear writing style adapted to the audience (you viewpoint); positive, non-offensive language; avoided clichés, jargon. Strong sentence and paragraph structure (active versus passive voice, variety of structures). 8/13 = 61% 6/13 = 46%
Grammar and Mechanics Results SpSu2015 2016	Frequent errors in use of Standard English, including punctuation and spelling, grammar, and sentence structure. 2/13 = 15%	Generally acceptable application of rules of Standard English, with limited errors in punctuation, grammar, and sentence structure. No errors in spelling 7/13 = 54% 4/13 = 31%	No errors applying rules of Standard English, with no spelling errors. 6/13 = 46% 7/13 = 54%
Format Results SpSu2015 2016	Unprofessional design and appearance.	Professionally designed, with reasonable appearance. 7/13 = 54% 5/13 = 39%	Professionally designed, balance appearance. 6/13 = 46% 8/13 = 61%

GOAL ASSESSMENT 3.2

Goal 3: To develop individual and group communication competencies needed in a multifaceted IT environment.

(2) OBJECTIVE: Students will articulate orally an IT solution to a business problem/opportunity.

Date: Spring 2015
Course: BINS 7353
Students: 21/21

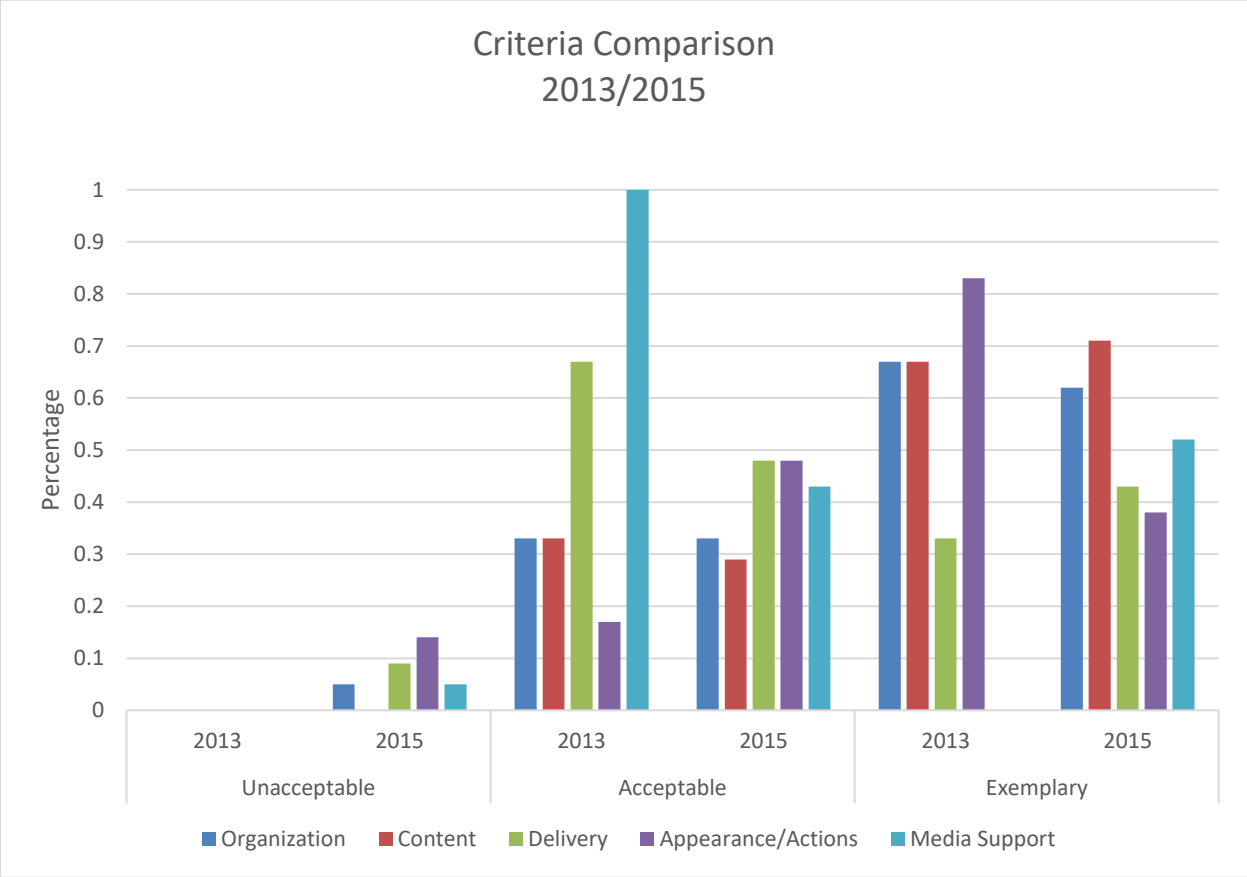
Individual presentation (final project) in BINS 7353 were evaluated by two faculty members who teach presentation skills. They were reviewed based on the rubric used to evaluate speaking in the curriculum.

Oral Communication

Criteria	Unacceptable (0-1 pt)	Acceptable (2-3 pts)	Exemplary (4-5 pts)
Organization	Unfocused and loosely connected sequence of presentation. No clear objective and poor transitions between parts. Details unorganized.	Limited incidences of lack of logical flow. Purpose not always clear, with only a few minor incidences of incomplete or confusing information. Some transitions lacking	Topic well developed, with logical and effective sequence. Defined introduction (gained attention and interest) and conclusion with appropriate transitions between parts & adapted to audience.
Results 2013		2/6 = 33%	4/6 = 67%
2015	1/21 = 5%	7/21= 33%	13/21 = 62%
Content	Problem/objective poorly developed, with no identification of sources. Business content lacking, indicating unclear understanding of topic and audience.	Problem/objective evident in presentation with some identification of sources. Limited inclusion of business content, with lack of adequate detail and/or relevance. Content rushed for time limit.	Problem/objective clearly stated and developed throughout the presentation. Appropriate identification of sources and relevant inclusion of business content, indicating clear understanding of topic. Content appropriate for time limit.
Results 2013		2/6 = 33%	4/6 = 67%
2015		6/21 = 29%	15/21 = 71%

Delivery Results 2013 2015	Presentation appears unrehearsed, with limited enthusiasm/ confidence. Excessive dependence on notes/script. Distracting use of non-words; speaking style lacks variation in pitch and speed and exhibits poor enunciation. Excessive grammatical errors. No audience engagement and weak and inaccurate responses to audience 2/21 = 9%	Proficient presentation, with few grammatical errors. Occasional use of non-words (uh, ok, ums) and limited variation in pitch and speed. Dependence upon notes. Transitions between sections clear. Limited audience engagement, with acceptable responses to questions. 4/6 = 67% 10/21= 48%	Grammatically correct language used with enthusiasm and confidence. Effective speaking style, including clear enunciation, varied pitch and speed, and use of effective pauses. Transitions between sections very clear. Speaks directly to audience for a minute or more without reliance on script. Effectively engages audience and responds to questions accurately and effectively. 2/6 = 33% 9/21 = 43%
Appearance and Physical Actions Results 2013 2015	Distracting physical movements, such as excessive gestures, poor posture, and minimal or no eye contact. Unprofessional attire. 3/21 = 14%	Eye contact, gestures, and physical movements sometimes distracting. Physical appearance generally appropriate for audience. 1/6 = 17% 10/21 = 48%	Eye contact, gestures, and physical movements effectively incorporated into the delivery. Appropriate professional attire, with overall credible demeanor. 5/6 = 83% 8/21 = 38%
Media Support Results 2013 2015	Media design poor and not used effectively to integrate parts of presentation; visuals unclear and unreadable, with many grammatical and spelling errors. Technical problems without evidence of an alternative plan. 1/21 = 5%	Media design acceptable yet media does not effectively supplement oral content; visuals difficult to read, having cluttered slides, poor coloration, and/or minimal contrast. Free of spelling errors and having no more than two grammatical errors. Limited technical problems, including annoying sound 6/6 = 100% 9/21 = 43%	Media professional designed and integrated appropriately to supplement and reinforce presentation. Clear, readable, and free of all grammatical and spelling errors. Technical problems nonexistent 11/21 = 52%

Goals of >=75% of students scoring acceptable or excellent on each criteria was met.



Average Rating 2015:

	2015
Organization	3.86
Content	4.00
Delivery	3.24
Appearance/Actions	3.10
Media	3.48

Recommendations for Integration into Courses:

- Be creative to gain interest of audience, especially for intro/attention getter.
- Use PowerPoint template to ensure limited wording and use of visuals on slides.
- Incorporate oral citations for information from secondary sources.
- Focus on the audience—strong eye contact.
- Assure a professional design.
- Wear professional attire.
- Review “Making Effective Presentations” to assure suggested components are clear.

GOAL ASSESSMENT 4.1

Goal 4: To apply an ethical framework in decision making.

(1) OBJECTIVE: Students will identify an ethical dilemma and the impact on identified stakeholders.

(2) OBJECTIVE: Student will analyze alternative actions and consequences based on an identified Ethical Rule or Model.

Date: Spring/Summer 2016
Course: BINS 7350
Students: 13/21

A case analysis was used as the assessment instrument; theories related to ethical decision making were used as a foundation for the analysis. The ethical decision making metric developed by the college was provided to students as a guide in project completion.

Analysis
100% of students scored either acceptable or exemplary on each criterion, meeting the metric of >=75%.

Scores on each criterion continue to be high:

Average 2016	
Dilemma	4.31
Stakeholders	4.39
Alternatives	4.31
Action	3.85

Continued Action
The Analytical Thinking and Ethical Decision Making metrics should continue to be integrated throughout the curriculum.

Ethics

TRAIT	Unacceptable (0-1 pt.)	Acceptable (2-3 pts.)	Exemplary (4-5 pts.)
Identifies Dilemma Results Sp2014 Sp/S2016	Has a vague idea of what the dilemma is and is uncertain what must be decided 0/10 = 0% 0/13 = 0%	Identifies the dilemma, including pertinent facts, and ascertains what must be decided 1/10 = 10% 3/13 = 23%	Describes the dilemma in detail having gathered pertinent facts. Ascertains exactly what must be decided 9/10 = 90% 10/13 = 77%
Identifies Stakeholders and How Dilemma Impacts Them Results Sp2014 Sp/S2016	Is unsure which stakeholders are involved and/or impacted 0/10 = 0% 0/13 = 0%	Identifies some stakeholders and how they are involved in and/or impacted by the dilemma 4/10 = 40% 2/13 = 15%	Identifies most stakeholders and explains in detail how they are involved in and/or impacted by the dilemma 6/10 = 60% 11/13 = 85%
Analyzes Alternatives and Consequences Results Sp2014 Sp/S2016	Begins to appraise the relevant facts and assumptions and identifies some alternatives. 0/10 = 0% 0/13 = 0%	Clarifies at least two alternatives and predicts their associated consequences 1/10 = 10% 2/13 = 15%	Clarifies alternatives and evaluates each on the basis of whether or not there is interest and concern over the welfare of all stakeholders, possibly bringing in outside experiences/knowledge to bear on the problem. 9/10 = 90% 11/13 = 85%
Chooses an Action Results Sp2014 Sp/S2016	Has difficulty identifying an appropriate course of action from among alternatives 0/10 = 0% 0/13 = 0%	Formulates an implementation plan that delineates the execution of the decision 1/10 = 10% 4/13 = 31%	Formulates an implementation plan that delineates the execution of the decision and that evidences a thoughtful reflection on the benefits and risks of action 9/10 = 90% 9/13 = 69%

GOAL ASSESSMENT 5

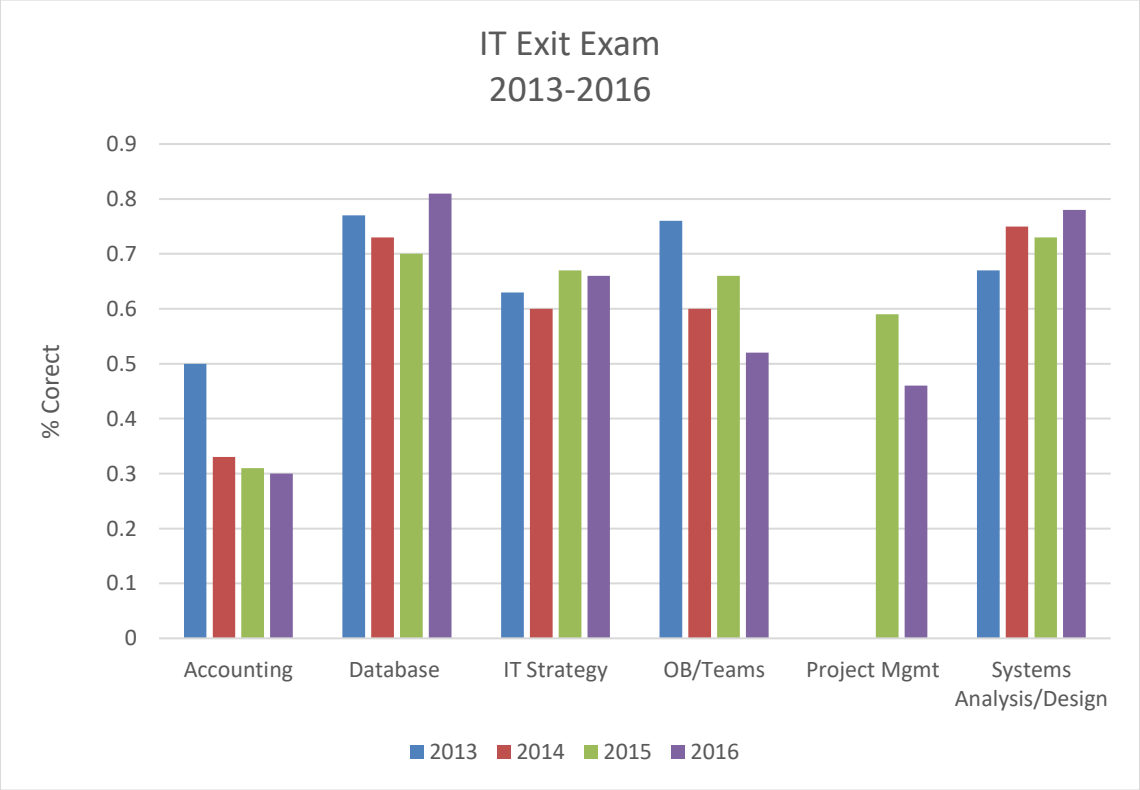
To develop an integrated understanding of the IT field

Goal 5: Students will demonstrate knowledge of select knowledge areas of IT.

MS in BIS Program Review Exam (May, 2013, 2014, 2015, 2016)

A comprehensive exam assessing developed knowledge in each program content area, based on program objectives, was administered in BINS 7353 at the end of the course (program culmination point). Total of 18 students took the exam in 2016, and 14 in 2015. The exam was developed by BIS faculty, assuring content validity.

Content areas assessed	2016	2015	2014	2013
Accounting	30%	31%	33%	50%
Analytics		97%		
Database Management Systems	81%	70%	73%	77%
IT Strategy	66%	67%	60%	63%
Organizational Behavior/Teams	52%	66%	60%	76%
Project Management	46%	59%		
Systems Analysis and Design	78%	73%	75%	67%



Analysis of Exam Results (questions missed by 40% or more of students)

1. Systems Analysis & Design
    a. #2—OO methodology
2. Database
    a. #6—SQL

    Comment: Last year #8—data structure missed by >50%; this year only 22%)
3. IT Strategy
    a. #14—TCO
    b. #16—sourcing
    c. #18—IT funding/cost
    d. #20—governance

    Comment: Last year #11—competitive forces missed by >50%; this year only 31%; #18 and #20 also missed by >50% of students last year.

4. Accounting
    a. #22 (linear regression),
    b. #23 (amortization)
    c. #25 (capital investment)
    d. #21 (profit calculation)
    e. #24 (cost allocation)

    Comment: Accounting still an area of major concern.

5. Org Behavior/Teams
    a. #26—leadership styles
    b. #30—leadership model
    c. #31—group development

    Comment: Comparable to last year.

6. Project Management
    a. #38—project stage development
    b. #39—project component analysis
    c. #42—developing project networks

    Comment: Same results as last year

Reactions:

The overall exam score average has fluctuated (2013; 60%, 2014, 67%, 2015, 52%). Comprehensive exam analysis revealed that the goal of 60% performance was met in Systems Analysis and Design (78%), Database (81%), and IT Strategy (66%). Business Analytics exam topics will be incorporated in 2017.

Recommendations:

1. Introduce/emphasize Styles of Leadership and Leadership models in MGMT 7312.
2. Emphasize IT issues in the section of ACCT 7304 for IT majors.

Appendix A

Curriculum Mapping Grid

Course Coverage of Learning Objectives MS in BIS 2016-2017				
	No Emphasis	**Limited Emphasis** (incorporation into coverage of other topics with no direct focus or activities)	**Moderate Emphasis** (distinct topic for some discussion and/or limited activities)	**Substantial Emphasis** (focal point for class coverage including significant assignments and/or testing)
LO 1.1: Students will demonstrate analysis and modeling techniques	Acct 7304 Bins 7304 Bins 7308 Bins 7309 Bins 7350 Bins 7353 Mgmt 7312		Bins 7305	Bins 7307
LO 1.2: Students will demonstrate data manipulation language skills.	Acct 7304 Bins 7304 Bins 7307 Bins 7308 Bins 7309 Bins 7350 Bins 7353 Mgmt 7312			Bins 7305
LO 1.3: Student will apply project management techniques.	Acct 7304 Bins 7304 Bins 7305 Bins 7308 Bins 7309 Bins 7350 Mgmt 7312		Bins 7307	Bins 7353
LO 2.1: Students will leverage the use of emerging technologies to solve a business problem or capitalize on an opportunity.	Acct 7304 Bins 7305 Bins 7308 Bins 7353 Mgmt 7312	Bins 7307		Bins 7304 Bins 7309 Bins 7350

LO 2.2: Students will critically analyze the strategic use of IT solutions to their constituents.	Acct 7304 Bins 7305 Bins 7307 Bins 7308 Bins 7353 Mgmt 7312			Bins 7304 Bins 7309 Bins 7350
LO 3.1: Students will clearly articulate in writing an IT solution to a business problem/ Opportunity.	Acct 7304 Bins 7305	Bins 7307		Bins 7304 Bins 7308 Bins 7309 Bins 7350 Bins 7353 Mgmt 7312
LO 3.2: Students will clearly articulate orally an IT solution to a business problem/opportunity.	Acct 7304 Bins 7305 Bins 7307			Bins 7304 Bins 7308 Bins 7309 Bins 7350 Bins 7353 Mgmt 7312
LO 4.1: Students will identify an ethical dilemma and the impact on identified stakeholders.	Bins 7304 Bins 7305 Bins 7307 Bins 7308 Bins 7353 Mgmt 7312		Acct 7304 Bins 7350 Bins 7309	
LO 4.2: Students will analyze alternative actions and consequences based on an identified Ethical Rule or Model.	Bins 7304 Bins 7305 Bins 7307 Bins 7308 Bins 7353 Mgmt 7312		Acct 7304 Bins 7350 Bins 7309	
5.1 Student will demonstrate knowledge of select knowledge areas of IT.				Acct 7304 Bins 7304 Bins 7305 Bins 7307 Bins 7308 Bins 7309 Bins 7350 Bins 7353 Mgmt 7312

Appendix B

Sample Detailed Course Analysis Grid

Course: BINS 7350
Information Systems Management

Learning Outcome	Objective Emphasis*	Student Behavior**	Content Coverage	Learning Activity/ Student Deliverable
LO 1.1: Students will demonstrate analysis and modeling techniques	No Emphasis			
LO 1.2: Students will demonstrate data manipulation language skills.	No Emphasis			
LO 1.3: Students will apply project management techniques.	No Emphasis			
LO 2.1: Students will leverage the use of emerging technologies to solve a business problem or capitalize on an opportunity.	Substantial Emphasis	C	Justify the implementation of an emerging technology to solve a business problem or produce quantifiable results (assessing impact on architecture/infrastructure, business processes, costs)	Collaborative project requiring a project proposal and presentation, with team self-critique.
LO 2.2: Students will critically analyze the strategic use of IT solutions to their constituents.	Substantial Emphasis	C	Justify the implementation of an emerging technology to solve a business problem or produce quantifiable results (assessing impact on architecture/infrastructure, business processes, costs)	Collaborative project requiring a project proposal and presentation, with team self-critique.
LO 3.1: Students will articulate in	Substantial Emphasis	C	Defend the role of IT investments in impacting	Team Wiki project that critiques the competitive impact of IT on

writing an IT solution to a business problem/ Opportunity.		4 3 2	the competitive positioning of an organization within its industry Map the process of linking customer preferences to product designs to manufacturing to distribution Apply the three theories of normative ethics and the PAPA framework to an ethical dilemma faced by an organization Explain the use of or impact of IT as an organization's business model evolves	positioning within an industry and defending the position with examples (Carr article). Written case analysis (Zara) that applies IT system design to support sales, manufacturing, marketing systems. Written case analysis (IVK) that applies ethics frameworks to solve an ethical dilemma. Report explaining the evolution of the Amazon business model focusing on different functional areas of business.
LO 3.2: Students will articulate orally an IT solution to a business problem/opportunity.	Substantial Emphasis	S S	Justify the implementation of an emerging technology to solve a business problem or produce quantifiable results (assessing impact on architecture/infrastructure, business processes, costs) Defend the role of IT investments in impacting the competitive positioning of an organization within its industry	Collaborative project requiring a project proposal and presentation, with team self-critique. Team Wiki project that critiques the competitive impact of IT on positioning within an industry and defending the position with examples (Carr article).
LO 4.1: Students will identify an ethical dilemma and the impact	Moderate Emphasis	3	Apply the three theories of normative ethics and the PAPA framework to an ethical dilemma faced by an organization	Written case analysis (IVK) that applies ethics frameworks to solve an ethical dilemma.

on identified stakeholders.				
LO 4.2: Students will analyze alternative actions and consequences based on an identified Ethical Rule or Model.	Moderate Emphasis	3	Apply the three theories of normative ethics and the PAPA framework to an ethical dilemma faced by an organization	Written case analysis (IVK) that applies ethics frameworks to solve an ethical dilemma.

*Objective Emphasis Level (breadth of emphasis in course)

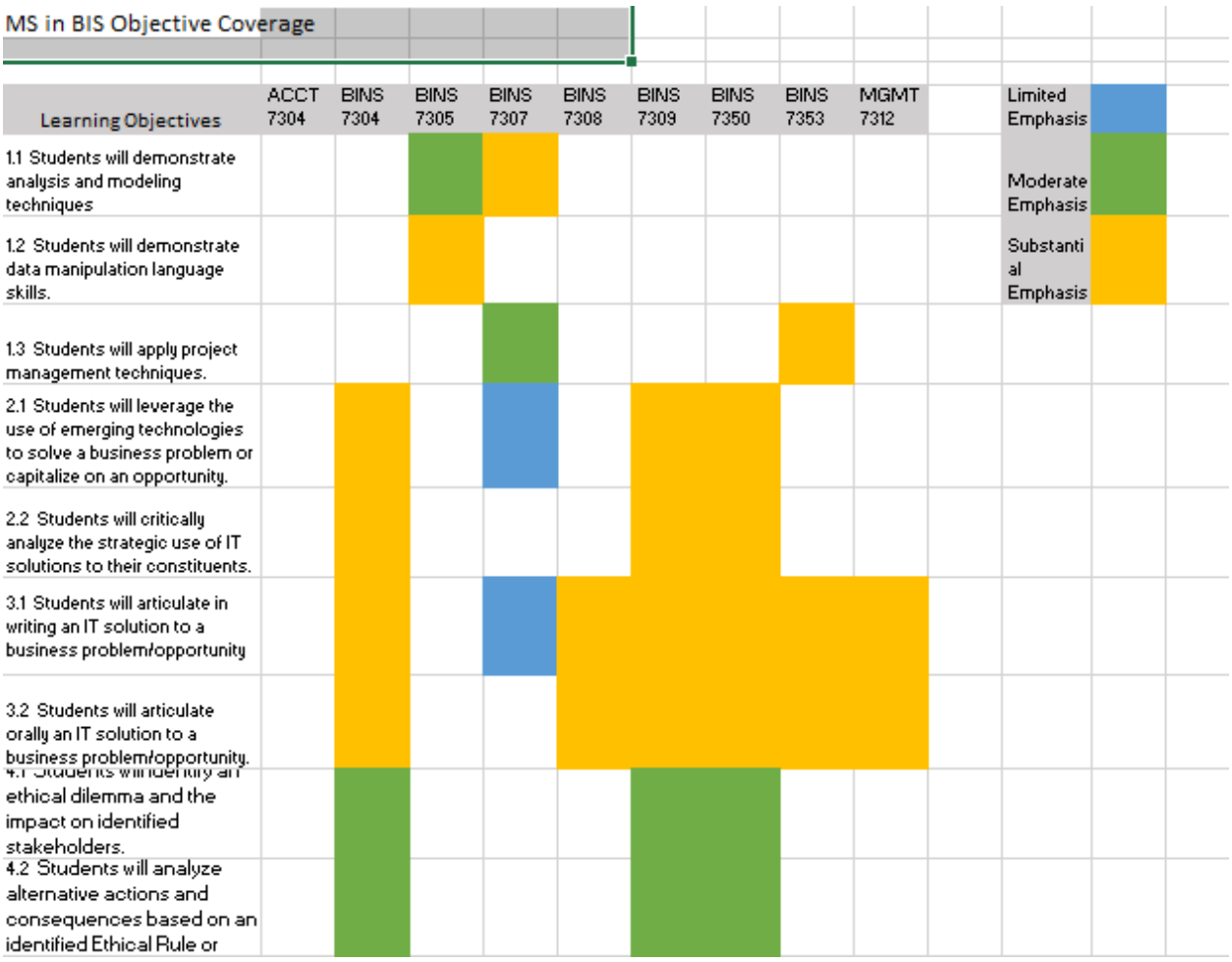
No Emphasis
Limited Emphasis: incorporation into coverage of other topics with no direct focus or activities
Moderate Emphasis: distinct topic for some discussion and/or limited activities
Substantial Emphasis: focal point of course coverage including significant assignments and/or testing

**Student Behavior/Skill Development

1 **Remember/Recall** information (tell, list, define)
2 **Explain/Describe** concepts (discuss, compare, demonstrate)
3 **Apply** in a new context (solve, interpret)
4 **Identify** component ideas or alternatives (examine, compare, differentiate)
5 **Justify/Defend** an application/decision based on evidence (assess, critique, defend, justify)
C Participate in collaborative task completed in team
S Design/deliver persuasive oral presentation

Appendix C

Heat Map



Appendix D

MS Program Review
Focus Group Results
Graduate Survey Results

- Leadership
- See the big picture
- Team leading
- Mentoring/coaching skills
- Managing different generations and aspects of the team
- Critical thinking
- Understanding the multiple levels of complexity
- Conversation
- Written, verbal and collaborative communication
- Team interaction
- Managing the workload
- Good business knowledge and how things should work of a company
- Group dynamic
- Management skills
- More strategic thinking rather than analytics
- Ethics
- At least a programming course
- Basic stat course
- System analysis and design
- Security/mobility/cloud
- Technical understanding rather than technical skills
- IT revenues and costs
- Managing budget
- Capital expenditure, operating expense
- Budget planning, forecasting analysis, trending
- Standard and compliance
- Business recovering plan
- SWOT analysis
- Risk analysis
- Business analytics and healthcare administration

Leadership
- Leadership
- See the big picture
- Team leading and mentoring/coaching skills
- More strategic thinking rather than analytics

Teams and Group Dynamics
- Team leading and mentoring/coaching skills
- Managing generational and other team issues
- Team interaction
- Group dynamics

Communication
- Conversation
- Written, verbal and collaborative communication skills
- Audience Adaptation

Critical thinking
- Understanding the multiple levels of complexity
- More strategic thinking rather than analytics
- Technical understanding rather than technical skills
- Good business knowledge and how things should work of a company
- Integrate ethics into decision making process

Technical skill
- Ethics
- At least a programming course
- Basic stat course
- System analysis and design
- Security/mobility/cloud
- Accounting
    - IT revenues and costs
    - Managing budget
    - Capital expenditure, operating expense
    - Budget planning, forecasting analysis, trending
    - GAP analysis
    - Financial contingency planning

Others
- Managing the workload
- Standards and compliance
- Business recovery, continuity planning
- SWOT analysis
- Risk analysis (security, legal issues)
- Business analytics and healthcare administration

Department Reactions/Actions

Leadership

- Emphasis on leadership and motivation theories/applications being integrated into MGMT 7312 Teams.
- Most technical courses (including analysis) designed to emphasize managerial issues and strategic issues.
- In BINS 7353 students serve as project managers for teams of undergraduate students completing projects for organizations; students gain experience in project management as well as working as the liaison between the client and students.

Teams

- Emphasis of MGMT 7312 Teams
- Generational issues emphasized in both MGMT 7312 and BINS 7308.
- Teaming experienced throughout program. For example, in BINS 7353 (see above) students observe and help manage team dynamics.

Communication

- Focus of BINS 7308.
- Emphasis throughout via written and oral assignments.
    - Use consistent processes via speaking and writing metrics integrated into the curriculum

Critical Thinking

- Provide increased opportunity for analysis of multi-dimensional issues:
    - Integrate "incomplete" assignments/projects requiring
        - Problem/audience analysis
        - Identification of all aspects of project; investigate how issues relate to "big picture"
        - Relate to decision process
    - Address through a strategic solution written in nontechnical terms
- In BINS 5351 use analytics tools to problem solve; the process involves problem identification in a business environment and customization of a solution to match the environment.
- In BINS 7353 students manage project teams. The process involves:
    - Developing/monitoring workload and performance standards.
    - SWAT analysis, involving risk assessment.

Technical Skill

- Integrate analysis of unstructured data into BINS 7309.
- Integrate prescriptive and predictive analytics into BINS 7304 (consider using R).
- Investigate feasibility of getting access to Hadoop for reporting in BINS 5351.

Other

- Incorporate compliance and standards into IT Governance content of BINS 7350.
- Incorporate introduction to risk analysis in BINS 7353 (basis risk plan built with contingencies).