Departmental/Program Assessment Report Form 2019-20

Assessment reports will be completed through Qualtrics to make it easier to share and compile data across campus. The reporting questions are similar to the questions used in the past, but with some additional detail requested in some areas to help us in collecting and analyzing college and institution-wide data on assessment practices. Your assessment reports will be maintained on file electronically on a password secure site (SharePoint). Other individuals on campus will have access to your reports.

Please complete one Assessment Report per learning outcome that you are reporting on.

Please identify your department or program and the name of your assessment liaison:

Department/Program: Business / QM 310- Business Statistics II, Spring 2020
Assessment Liaison: Prof. Parag Dhumal

1. What learning outcome did you assess for this report? (Reminder - If you assessed multiple learning outcomes this academic year, you should complete a separate report for each outcome.)

Students will be able to effectively use computer technology to support a business decision.

2. Which of the institution-wide shared learning goals does this outcome connect to?
➤ Communication (1)
➤ **Reasoned Judgment (2)**
➤ Social and Personal Responsibility (3)
➤ Other (4)

3. Is this the first/initial assessment of the selected learning outcome? (select one):
➤ **Yes**
➤ No

If you answered yes, please skip Question 4 and move to Question 5. If you answered no, please move to question 4.

4. Which of the following best describes this assessment report (select one):
➤ Follow-up assessment related to curricular changes (closing-the-loop).
➤ Follow-up assessment to address issues with the previous assessment process (e.g. collect more data, redesigned the assessment tool, etc.).
➤ **Routine assessment of the outcome.**

5. What assessment tool(s) or method(s) did you utilize? (Check all that apply)
- ➤ Survey (1)
- ➤ Standardized exam (2)
- ➤ **Exam from a course or courses (3)**
- ➤ Assignment from a course or courses (4)
- ➤ Student portfolios (5)
- ➤ Direct observation of student work or performance (6)
- ➤ Other (7) _____

6. What type of measurement did you utilize?
- ➤ **Direct (asking students to demonstrate their learning) (1)**
- ➤ Indirect (asking students to self-report their perceived level of learning) (2)
- ➤ A combination of the above (3)

7. What delivery mode did you use to collect your data? (Check all that apply)
- ➤ **Face to face course(s) (1)**
- ➤ **Online course(s) (2)**
- ➤ Hybrid course(s) (3)
- ➤ Flex Option (Competency Based) course(s) (4)
- ➤ Not tied to a course (5)
- ➤ Other: Please Specify: _____

8. What was the approximate sample size of this assessment (i.e. number of students assessed)? Fill in your answer here: _____

QM 310-001: Face to Face – 26 students
QM 310-002: Face to Face – 29 students
QM 310-003: Online – 26 students

9. Beyond the general details provided above, what student work was collected and how was it evaluated? The purpose of this question is to allow you to elaborate on the previous questions, and present the scope of the assessment and its relationship to student attainment of the specified learning outcome. Please reference the curriculum map, if used.

Following rubric was used assess PLLG6 on scale rating scale of Exemplary, Satisfactory, and unsatisfactory.
- • Identify the Math Technique or Formula
- • Formulate the model for a specific situation
- • Solution and analysis

Hypothesis testing comparing means of two population was used for analysis. This question was appeared in the midterm exam and students had on average 20 min to compete question.

Solution involved identifying type of problem with following possibilities
1. Type of test- Comparing Means of two population (correct), Chi square test

2. Tail of the hypothesis- lower one tail, upper one tail, two tail (correct)
3. Population standard deviation – known , unknown (correct)

In face to face students professor conducted many exercise problem in class that demonstrated how to identify problem correctly. After practicing problems in class students completed HW assignment problem by their own. They could see feedback and can redo similar instance of assignment problem again until they reach desired level of competency. Online students were provided with instructor written notes that specified how to identify problems along with examples. In addition, reference were provided in textbook on correctly identifying problem. Online students completed same set of HW assignment problems just like face to face students to practice their skills.

Once problem is correctly identified, they have to find
1. Test statistics value,
2. Critical value,
3. p value.

Precision of answer required students to use technology- Excel, to find answers. In face to face classes students went through practice problem in class along with professor who demonstrated them how to use Excel formulas. They practiced their newly learned skills on HW assignment problems. Online students were given list of excel formulas with examples and similar references occurred in the textbook. They too completed HW assignment problems.

Once necessary information is computed students have to interpret and make decisions. These can summarized as
1. Interpret critical and p values
2. Write conclusion based on critical value and p value.

Face to face students completed problems in class under instructions from professor followed by HW assignment problems. Online students received procedure sheet from professor demonstrating how to make decisions. Students had numerous solved examples in textbook to review and they did HW assignment problems afterword.

11. How were other instructors (faculty, lecturers, and adjuncts) involved with the assessment process?

Subgroup of tenured faculties in this discipline was formed to discuss and conduct assessment for PLLG6 and PLLG7. The subgroup is also planning to present the results to the department of business in a future department meeting.

12. As a result of this assessment, were any changes proposed? If yes, please describe and indicate the projected timeline. Please comment on any barriers to implementation.

Results obtained from this assessment are given in the table below. Tables provides percentwise comparison between different section and between face to face and online classes. In general we can conclude

- Most of the students falls under Exemplarity grade in all categories
- Mostly less than 10% students are under unsatisfactory grade with exception of Solution and Analysis.
- Students find interpreting the statistical results and making decision most challenging compared with identifying the techniques or formulating & solving problem using Excel.
- Compared with face to face students, online students falls behind formulating & solving problem using Excel.

	Category	Exemplary	Satisfactory	Unsatisfactory	Total
Sec 001 F2F (n = 26)	Identify the Math Technique or Formula	65.4%	26.9%	7.7%	100%
	Formulate the model for a specific situation	53.8%	46.2%	0.0%	100%
	Solution and analysis	46.2%	34.6%	19.2%	100%
Sec 001 F2F (n = 29)	Identify the Math Technique or Formula	65.5%	31.0%	3.4%	100%
	Formulate the model for a specific situation	62.1%	31.0%	6.9%	100%
	Solution and analysis	65.5%	24.1%	10.3%	100%
F2F (n = 55)	Identify the Math Technique or Formula	65.5%	29.1%	5.5%	100%
	Formulate the model for a specific situation	58.2%	38.2%	3.6%	100%
	Solution and analysis	56.4%	29.1%	14.5%	100%
Sec 003 Online (n = 26)	Identify the Math Technique or Formula	61.5%	34.6%	3.8%	100%
	Formulate the model for a specific situation	50.0%	38.5%	11.5%	100%
	Solution and analysis	42.3%	50.0%	7.7%	100%

Results of our assessment are extremely satisfactory. One of the reasons being QM310 is core course with numerous sections taught per year over long period of time (10 years). It provides opportunities, though minor, for improvements. Since percentage of students in unsatisfactory category is small and variations among students from batch to batch is higher (see section 1 and section 2), future assessment results may not be able to accurately capture impact of changes suggested below. Nevertheless, pedagogy literature and commonsense suggest these changes will certainly help student learning and are in the direction where academia and technology is progressing.

Following changes should be incorporated in future design and delivery of course
1. More quiz type practice questions based on interning provided results and making accurate decisions. This should help to address deficiencies in Solution and Analysis category.
2. Excel videos demonstrating statistical techniques should help to address online students less satisfactory performance in technology skills category.