

PROGRAM ASSESSMENT REPORT

Program Code	CTSCO	Name	Supply Chain Operations
Division	BCT	Department	Business
Award	<input type="checkbox"/> A.A. <input type="checkbox"/> A.S.	<input type="checkbox"/> A.A.S.	
	<input checked="" type="checkbox"/> Cert. <input type="checkbox"/> Adv. Cert. <input type="checkbox"/> Post-Assoc. Cert. <input type="checkbox"/> Cert. of Completion		

I. Review previous assessment reports submitted for this program and provide the following information.

1. Was this program previously assessed and if so, when?

This is the first assessment for the Supply Chain Operations Certificate.

2. Briefly describe the results of previous assessment report(s).

N/A

3. Briefly describe the Action Plan/Intended Changes from the previous report(s), when and how changes were implemented.

N/A

II. Background Information

1. Indicate the semester(s) and year(s) assessment data were collected for this report.

2017-18 and 2018-19

2. Assessment tool(s) used (check all that apply):

- Portfolio
- Standardized test
- Other external certification/licensure exam (please describe): _____
- Graduate Survey
- Employer Survey
- Advisory Committee Survey
- Transfer follow-up
- Externally evaluated performance or exhibit
- Externally evaluation of job performance (internship, co-op, placement, other)
- Capstone experience (please describe):
- Other (please describe): Program Map, Success Rates from IR, Course Assessments

3. Have any of these tools been used before?

- Yes (if yes, identify the tool below and describe any changes made since it was last administered)
- No

Changes:
This is the first assessment for the Supply Chain Operations Certificate.

4. Indicate the number of students assessed/total number of students enrolled in the course(s)/program. The original assessment plan was created in 2011. It called for students enrolled in any of the four (now 5) required courses who are completing the certificate in the assessment semester to be included in the assessment population and sampling. While this may appear logical, it is not practical for several reasons.

- This is not a cohort model. The 5 courses are not taken in a sequential order. Students can take the courses in any order they prefer in a way that works best with their schedules.
- Identifying the students targeted in the original plan would be difficult to discern. Plus finding individual performance for those students in each of the classes in the program would also be time consuming and difficult to discern.
- The average number of active students in the program from Fall 2017 to Winter 2019 is 13. If you whittle this down to just those who are completing the certificate for the assessment semester, it does not yield a large sample.

Therefore for this assessment, I created a revised Program Assessment Plan (PAP) which is being submitted along with this assessment.

5. Describe how you selected students for the assessment.

- Describe your sampling method.
- Describe the population assessed (e.g. students in capstone course, graduating students, alumni).

Course Assessments: All students taking the course in the semester being assessed

III. Results

1. State every outcome from the Program Assessment Planning or Program Proposal form for the program.

Course Mapping

Program Outcomes	Courses in the Program				
	BMG 181 Intro to Supply Chain Management	BMG 182 Warehousing & Logistics	BMG 226 Transportation & Logistics	BMG 228 Purchasing & Inventory Control	BMG 275 Business & Supply Chain Analytics
Identify the principles and practices related to coordinating suppliers, manufacturers, distributors, and retailers to ensure products and services are available to the final consumer in a timely and cost-effective manner while meeting customer service demands.	X	X			
Apply the analytical tools and techniques related to coordinating suppliers, manufacturers, distributors and retailers to ensure products and services are available to the final consumer in a timely and cost-effective manner while meeting customer service demands.			X	X	X

2. Briefly describe assessment results based on data collected during the program assessment, demonstrating the extent to which students are achieving each of the learning outcomes listed above. ***Please attach a summary of the data collected (as a separate document).*** Add more lines as needed.

Program Outcome 1 (BMG 181 & 182):

Identify the principles and practices related to coordinating suppliers, manufacturers, distributors, and retailers to ensure products and services are available to the final consumer in a timely and cost-effective manner while meeting customer service demands.

BMG 181 Introduction to Supply Chain Management

Since this course was revised effective Winter 2018 it has never been assessed. Students do have the option of sitting for the Certified Logistics Associate (CLA) industry certification exam. Results show that a little over 91% of students who take the CLA certification test pass.

BMG 182 Warehousing and Logistics

Since this course was revised effective Winter 2018 it has never been assessed. Students do have the option of sitting for the Certified Logistics Technician (CLT) industry certification exam. Results show that a little over 84% of students who take the CLT certification test pass.

Program Outcome 2 (BMG 226, 228, and 275):

Apply the analytical tools and techniques related to coordinating suppliers, manufacturers, distributors and retailers to ensure products and services are available to the final consumer in a timely and cost-effective manner while meeting customer service demands.

BMG 226 Transportation and Logistics

Based on the August 2017 assessment, this course underwent a major revision. The new version of the course has not been assessed.

BMG 228 Purchasing and Inventory Control

Based on feedback from industry experts and the Business Advisory Board, BMG 228 replaced BMG 227 (Merchandising and Inventory Control) during the 2015-16 academic year. It is scheduled for an assessment during Fall 2019 with a report to be submitted Winter 2020.

BMG 275 Business and Supply Chain Analytics

This course also underwent an assessment (submitted April 2017) which resulted in a major overhaul to update everything to Excel 2016 for the 2017-18 academic year. Another assessment was submitted during the Winter 2019 semester. Standard of success to be used for this assessment: 75% of students scoring 70% or better.

Course Outcome 1: Identify the problem-solving process and associated analytic decision-making tools used in business and supply chain management.

For the April 2017 assessment, 75% of the students scored 70% or better. The result for Winter 2019 was 82.8%.

Course Outcome 2: Analyze data and make decisions using problem-solving, decision-making and Excel analytic tools.

For the April 2017 assessment, descriptive statistics aspect of this outcome, 81% of the students scored 70% or better; predictive statistics, 82%; and prescriptive 94% for the If Function and 83% for inductive/deductive reasoning. The Winter 2019, the result for all three was 82.8%.

3. Describe the areas of strength and weakness in students' achievement of the learning outcomes shown in assessment results.

This program was revamped for Fall 2015 for two reasons.

Industry Certifications: BMG 180 (the original introduction to Supply Chain Management) was split into two courses – BMG 181 and BMG 182. BMG 181 now prepares students to take the Certified Logistics Associate (CLA) industry certification and BMG 182 prepares students to take the Certified Logistics Technician (CLT) industry certification. Both are optional for students. The certifications are awarded by the Manufacturing Skills Standards Council (MSSC).

Warehouse Emphasis: With the growth of online retailing, warehousing is becoming a significant player in the supply chain. Therefore, BMG 182 Warehousing and Logistics was created to prepare students for future job opportunities.

Awards for this program have been increasing every academic year: 2015-16 (3); 2016-17 (15); and 2017-18 (22).

When looking at course assessment results to investigate specific strengths and weaknesses, there has been improvement in the percentage of students meeting the standards for success. Some of this improvement can be explained by the fact that these five courses are constantly being evaluated and revisions made to make the courses better for students.

All five courses are new courses that had never been offered prior to this program being developed and launched in 2012 and revised in 2015.

BMG 181 Introduction to Supply Chain Management

BMG 181 was first offered in the 2015-16 academic year. It is the result of the original BMG 180 being split into BMG 181 and 182 to better prepare students for the industry certification assessments and to include a warehousing course in the SCM program. A little over 91% of students who take the CLA industry certification test pass.

Course Outcomes:

- Identify the supply chain ecosystem including the players, their roles, and corporate social responsibility.
- Recognize various warehouse layouts, safety procedures, operational processes, and quality control principles needed to ensure customers receive the right product at the right time, place, price, and condition.
- Identify various types of teams and the related communication and workplace behavior needed to work effectively throughout the supply chain.

Summary:

This course has not been assessed yet since it was revised effective Winter 2018. The revisions included changing to no textbook required and updating the outcomes. An assessment is scheduled to be conducted during the Fall 2020 semester with the results submitted Winter 2021.

BMG 182 Warehousing and Logistics

BMG 182 was first offered in the 2015-16 academic year. It is the result of the original BMG 180 being split into BMG 181 and 182 to better prepare students for the industry certification assessments and to include a warehousing course in the SCM program. A little over 84% of students who take the CLT certification test pass.

Course Outcomes:

- Identify and apply the processes and practices needed in warehouse operations
- Recognize the basic modes of cargo transport and related processes.

Summary:

This course has not been assessed yet since was revised effective Winter 2018. The revisions included changing to no textbook required and adding one outcome. An assessment is scheduled to be conducted during the Fall 2020 semester with the results submitted Winter 2021.

BMG 226 Transportation and Logistics

This course was created in 2014 using an industry expert who then taught the course. A major problem was discovered with BMG 226 when it underwent an assessment with the report submitted in August 2017. The findings included:

- The flow of the course needed improvement. It started out with concepts that were too intimidating - especially for an online course. The students did not yet have the foundation to understand the complexities of how freight transportation works.
- The balance of information was off. Two units were devoted to describing in intricate detail a process - the bid cycle - that takes place only when companies decide to make a change in service providers or implement a new strategic approach.
- Freight transportation is undergoing change at a rapid pace (e.g., drones, Uber freight, smart highways, self-driving trucks) and there was not a mechanism for keeping the course up to date.
- Students used a textbook created by WCC as the main source of information as well as outside videos, articles, and websites.
- There were only two lectures and one panel discussion. There were no interactive activities.
- There were 30 students at the beginning of the semester and 22 at the end. That means 27% of students withdrew from the course.
- The instructor presence was nonexistent in the Winter course that was assessed. There were three announcements the first week of class and only four for the rest of the semester. In looking at grading and feedback, the rubrics were not used and students received only a grade with no explanation.

Therefore, a "clean slate" approach was used and the course was totally redesigned – eliminating the textbook and creating new units, modules, and lessons. The first unit now sets the foundation for later units. The two units that dealt with the bid cycle were reduced to one lesson. The last unit was changed to keep the course updated and accommodate innovations, security, and sustainability issues in freight transportation.

With the ADA requirements, the course needed to be more self-contained so outside sources are now minimal and there are more WCC-created lectures and activities to support student learning. Also, a new instructor was hired to teach the revised course in Fall 2017.

Course Outcomes (Effective Winer 2018):

Outcome 1: Recognize the diversity and similarities of the basic modes of transportation.

Outcome 2: Identify and apply the basic economics of transportation costing and pricing in a free market economy.

Outcome 3: Identify the current and emerging issues in transportation planning.

Summary:

This new course has not been assessed and one is scheduled to be conducted during the Winter 2021 semester with the results submitted Fall 2021.

BMG 228 Purchasing and Inventory Control

Based on feedback from industry experts and the Business Advisory Board, BMG 228 replaced BMG 227 (Merchandising and Inventory Control) during the 2015-16 academic year.

Course Outcomes

- Use purchasing vocabulary and concepts related to source selection, pricing, quality, supplier management, and negotiation strategies to effectively purchase goods and services for an organization.
- Identify and apply concepts related to maintaining inventory investments at reasonable levels while providing sufficient inventory to meet demand.
- Perform business math calculations related to purchasing, buying, and inventory management.

Summary

This course is scheduled for an assessment during the Fall 2019 semester with the report submitted Winter of 2020. Anthony Terry is the lead instructor for this course and will do the assessment. A departmental exam will be used with a standard of success as 75% of students will score 70% or better.

BMG 275 Business and Supply Chain Analytics

This course was created based on recommendations by the School of Business and Entrepreneurial Studies Advisory Board. They said, "We need employees who can manipulate data for us in Excel." Therefore, the course was created and incorporated into the Retail and Supply Chain Operations certificate and the Supply Chain Operations certificate. It is now also part of the Applied Data Analytics certificate which is a joint effort between the Business and CIS departments.

Conversations and reviews with the BMG Advisory Board and from analytics experts who use Excel daily are used to continuously review the content of the course. We have tweaked the course twice and BMG 275 underwent a minor revision for the 2016-17 academic year.

This course underwent an assessment (submitted April 2017) which resulted in a major overhaul to update everything to Excel 2016 for the 2017-18 academic year and the changes were implemented in Winter 2017. We added VLookup functions and eliminated Scenario Manager functions. The group project was eliminated and in its place we added more virtual meetings with instructor. Videos were updated using Lynda.com and we eliminated Youtube videos where possible.

Standard of success to be used for this assessment: 75% of students scoring 70% or better.

Outcome 1: Identify the problem-solving process and associated analytic decision-making tools used in business and supply chain management. (Current Master Syllabus)

For the April 2017 assessment, 75% of the students scored 70% or better. The unit tests seemed to be the downfall of a number of students. The unit tests focus on the concepts rather than the actual using of the Excel tools.

To compensate for this and to prepare students to understand what these tests cover, the redesigned course now has practice quizzes so students can study for the unit tests. The redesigned course also addressed the problem solving and decision making tools in more detail and with more background so students would understand the underlying reasons to use the Excel tools.

The two main areas of strength for Outcome 1 were Mind Maps & Affinity Diagrams. The discussion about Effective Teams which combined personal experience on teams with outside research was also a strength.

The Winter 2019 assessment showed that 82.8% of students received a 70% or better. The unit tests and 3 graded Excel assignments were used to assess this outcome. The low score is primarily due to non-submission of assignments and not the actual performance on the assignment. Students seem to struggle with the decision tree process. One improvement we plan to make is adding more practice problems.

Outcome 2: Analyze data and make decisions using problem-solving, decision-making and Excel analytic tools. (Current Master Syllabus)

The original Master Syllabus had 3 outcomes and distinguished between descriptive, predictive, and prescriptive analytics. The April 2017 assessment of Outcome 2 was based on the original outcomes.

Descriptive: 81% of the students scored 70% or better with nine assignments used to assess this outcome. When reviewing the data, however, two areas of concern surfaced. The biggest area of concern was pivot tables. While 76.5% scored 70% or better, there were no students in the A-range. Therefore, the redesigned course for W17 spent more time explaining the purpose of pivot tables as well as explaining how to create them in Excel.

The other area of concern was the group project to create an action plan with 41.2% failing. This was due entirely to non-participation. Online group projects are difficult and since the Master Syllabus does not require any, we eliminated this group project in the redesigned W17 course and dealt with action plans on an individual basis.

The major areas of strength were creating informative and visually appealing charts, Fishbone diagrams, and Control Charts in Excel. Students also did well on the Quick Quiz about adaptive techniques used in problem solving.

Predictive: 82% of the students scored 70% or better with eight assignments used to assess this outcome. When reviewing the data, however, two areas of concern surfaced. The biggest area of concern was the Solver Excel tool. Only 63.6% of the students scored 70% or better with 36.4% failing. In talking with members of the Business Advisory Board and industry experts who use Excel in their daily work, it was determined that Solver is not a tool frequently used. It was recommended that we replace this with VLOOKUP which is used often. Therefore, the redesigned course for W17 did not include Solver and does include VLOOKUP.

The other area of concern was the What-If Tables & Goal Seek with 1/3 of the class failing this assignment. The redesigned course for W17 includes more videos about how and why this tool is used as well as how to manipulate data in Excel using What-If Tables and Goal Seek.

Prescriptive: Students did well on the If Function in Excel with 94% of students receiving a 70% or better. For the Quick Quiz about inductive/deductive reasoning and associated fallacies, 83% of students scored 70% or better.

Following the April 2017 assessment, a new master syllabus was created using only two course outcomes. The Winter 2019 assessment is based on the second outcome in the new syllabus which is identified above.

Twenty-seven assignments were used to assess this outcome with 82.8% of students scoring 70% or higher. They seem to do very well with building charts, If Statements, and VLOOKUP functions. They do struggle with some of the more advanced functions such as decision matrices, Nested If statements, Pivot Tables, sorting and filtering.

Summary

This course is a difficult one for students. One overall major concern is that students struggle analyzing the stories that the data are telling. True analysis is interpreting the numbers, lines, and trends. They also struggle with simply following instructions. The plan is to revisit the course, start with a clean slate, and redesign the course to address the concerns note in the course assessments.

IV. Changes influenced by assessment results

1. Based on the previous assessment report Action Plan(s) identified in Section I above, please discuss how effective any changes were in improving student learning.

N/A – This is the first assessment for this program.

2. If weaknesses were found (see above) or students did not meet expectations, describe the action that will be taken to address these weaknesses. If students met all expectations, describe your plan for continuous improvement.

No major changes to the program are planned. Several plans are in place, however, for the individual courses

Winter 2019 Assessment Results

BMG 275 – It is anticipated that major changes will be made to this course to improve the explanation of each Excel function, add more practice problems, and add more focus on the analysis of the data.

Assessment scheduled Fall 2019:

BMG 228 is scheduled to be assessed during the Fall 2019 semester; results submitted Winter 2020.

Assessments scheduled Fall 2020:

BMG 181 is scheduled to be assessed during the Fall 2020 semester; results submitted Winter 2021.

BMG 182 is scheduled to be assessed during the Fall 2020 semester; results submitted Winter 2021.

Assessment scheduled Winter 2021:

BMG 226 is scheduled to be assessed during the Winter 2021 semester. results submitted Fall 2021.

3. Identify any other intended changes that will be instituted based on results of this assessment activity. Describe changes and give rationale for change. (Check all that apply).

a. Outcomes/assessments from Program Assessment Planning or Program Proposal form:

b. Program Curriculum:

- Course sequencing
- Course deletion
- Course addition
- Changes to existing program courses (specify):
- Other (specify):

c. Other (specify):

4. What is the timeline for implementing these actions?

See #2 above

V. Future plans

1. Describe the extent to which the assessment tools used were effective in measuring student achievement of learning outcomes for this program.

The upcoming course assessments will be quite helpful in the second assessment of the overall program as well as the individual courses within the program.

2. If the assessment tools were not effective, describe the changes that will be made for future assessments.

Submitted by:

Name: Cheryl S. Byrne, PhD (Digital Signature) Date: March, 14, 2019
Print/Signature

Department Chair: Doug Waters / Jay White Date: 3-22-19
Print/Signature

Dean: Eric Samulski / Eric Samulski Date: 3-25-19
Print/Signature

Please return completed form to the Office of Curriculum & Assessment, SC 257.

Reviewed by AL 4/4/19