

Assessment Cycle 2022 – 2023

MS in Computer Information Systems

Division: School of Business, College of Business and Technology Prepared

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Northwestern Mission. Northwestern State University is a responsive, student-oriented institution committed to acquiring, creating, and disseminating knowledge through innovative teaching, research, and service. With its certificate, undergraduate, and graduate programs, Northwestern State University prepares its increasingly diverse student population to contribute to an inclusive global community with a steadfast dedication to improving our region, state, and nation.

College of Business and Technology Mission. The College of Business and Technology is dedicated to providing a high quality – market responsive business and technology education, preparing our diverse student population for successful careers and enriched lives in the public, private and nonprofit sectors, and enhancing our students' academic experiences through our research and scholarly activities.

School of Business Mission. The mission of the School of Business is to provide our diverse student population with innovative skills in business and technology to prepare them for successful careers and responsible citizenship roles to have a positive societal impact in the world of business. (Adopted 2017-2018 – mission wording was revised to include “our diverse population”; Adopted 2020-2021 – mission wording was revised to reflect societal impact)

As such, NSU's School of Business is committed to ...

Providing students with a business education. This means that we strive to provide students with opportunities to become effective communicators, critical thinkers, develop knowledge across the business disciplines, and global perspective.

Preparing them for successful careers and citizenship roles. This means that we provide education experience and opportunities.

...In the world of Business. This implies developing a global perspective that involves managing activities that foster the transfer of goods and services in organizations of all types wherever found.

Computer Information Systems Program Mission Statement: The mission of the MS in Computer Information Systems in the School of Business at Northwestern State is to prepare our diverse student populations for careers as

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information systems and technology professionals in the public, private and nonprofit sectors, and/or for advancement into doctoral programs. This purpose will be met by providing quality online and face-to-face business and technology instruction and academic support with high academic standards, superior teaching, quality research, significant service, and effective use of technology for the citizens of our region. (Approved by CIS faculty on 6/9/2021).

Purpose: To prepare students for careers as business professionals in the public, private and nonprofit sectors, and/or for advancement into graduate programs.

Methodology: The assessment process for the School of Business includes:

- (1) The MS in Computer Information Systems collects SLO data each year.
- (2) A variety of assessment tools (quantitative, qualitative, direct and indirect) are used to collect data for analysis for each of the Student Learning Outcomes (SLOs).
- (3) Data is collected and returned to the SLO Chairs.
- (4) Summary results are analyzed to determine if students have achieved or “met” the measurable outcomes. When necessary, proposed action steps are created by each SLO chairman in collaboration with the SLO committee members, faculty teaching core courses, and the program coordinator.
- (5) Following discussion and review by appropriate faculty, if needed, proposed recommended action steps, and recommended changes are implemented by the faculty responsible for teaching the courses tied to the SLO.
- (6) Individual meetings are held with faculty and staff as required.
- (7) In consultation with the staff and senior leadership, proposed changes to measurable outcomes, assessment tools for the next assessment period and, where needed, service changes will be recommended.
- (8) These proposed recommended action steps and recommended changes are implemented by the faculty responsible for teaching the courses tied to the SLO.

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Student Learning Outcomes (SLOs):

SLO 1. Demonstrate discipline-specific content knowledge. Students should be able to demonstrate understanding of key concepts and theories in areas of CIS as well as demonstrate the ability to draw on knowledge and insights from a variety of disciplines when analyzing and formulating solutions to problems and opportunities.

Course Map (Tied to course syllabus objectives):

CIS 5950 – Research Project and/or Thesis

Measure 1.1 (Direct – Exam; Entrance Exam)

Details/Description: The unit strives to give students the baseline knowledge exam prior to registration for their first semester. This exam covers key concepts and theories in Computer Information Systems. The exam included multiple choice questions as well as short answer questions. The questions are grouped into categories: Programming, Software Applications, Networking, Cyber Security, Databases, Data Analysis, and Project Management. The exam also includes questions related to analytical techniques and research questions.

Acceptable Target: In each category, 50% or more of students will get at least one answer correct.

Ideal Target: In each category, 75% or more of students will get at least one answer correct.

Implementation Plan (timeline): This measurement is completed as students are entering the program and registering for classes. Students can enter the program in the spring, summer, or fall semesters.

Key/Responsible Personnel: A faculty member is currently receiving an extra services contract to coordinate the graduate program and is responsible for this administration. Upon determination of a permanent coordinator of the program, that coordinator would be responsible for the administration of the baseline knowledge exam.

Finding: The acceptable target was **not met** in every category. The ideal target was **not met** in every category.

Analysis: In AC 2021-2022, the target was **not** met. The table below shows the results for the 2021-2022 assessment cycle for Measure 1.1.

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Table 1: AC 2021-2022 Baseline Knowledge Exam Results

Area	% with No Answers Correct	% with Some Answers Correct	% with All Answers Correct
Programming	0%	0%	100%
Software Applications	0%	33%	67%
Networking	0%	33%	67%
Cyber Security	0%	67%	33%
Databases	100%	0%	0%
Data Analysis	33%	67%	0%
Project Management	0%	100%	0%

Three students took the baseline knowledge exam. The acceptable and ideal targets were **met** in the areas of Programming, Software Applications, Networking, Cyber Security, and Project Management. The acceptable, but not the ideal target was **met** in Data Analysis. Neither target was met in Databases. Thus, overall, the acceptable target was not met, and the ideal target was not met for all categories. While the targets were not met for every category, the second-year cohort did improve in almost every category as compared to the first-year cohort. The change of requiring the prerequisites appeared to help enhance the baseline knowledge exam results.

Based on the analysis of the AC 2021-2022 results, the faculty implemented no changes in 2022-2023 to drive the cycle of improvement. Based on the increase in exam scores from 2020-2021 to 2021-2022, the CIS faculty continued to require students to meet the prerequisites before taking the MS program classes with those requirements. Additionally, this target serves as a baseline against which to measure the results of the exit exam.

As a result of these changes, in 2022-2023, the target was **not** met. The table below shows the results for the 2022-2023 assessment cycle for Measure 1.1

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Table 2: AC 2022-2023 Baseline Knowledge Exam Results

Area	% with No Answers Correct	% with Some Answers Correct	% with All Answers Correct
Programming	0%	0%	100%
Software Applications	0%	0%	100%
Networking	100%	0%	0%
Cyber Security	0%	100%	0%
Databases	100%	0%	0%
Data Analysis	100%	0%	0%
Project Management	100%	0%	0%

One student took the baseline knowledge exam so the analysis should be considered with this limited response. The acceptable and ideal targets were **met** in the areas of Programming, Software Applications, and Cyber Security. Neither target was met in Networking, Databases, Data Analysis, and Project Management. Thus, overall, the acceptable target was **not** met, and the ideal target was **not** met for all categories. Unfortunately, the third-year cohort did not improve compared to the second-year cohort.

Decision:

In 2022-2023, the target was not met. Based on the analysis of the 2022-2023 results, the faculty will implement no changes in 2023-2024 to drive the cycle of improvement. While the scores did not increase in 2022-2023 as compared to 2021-2022, the scores also represented one student. This student also was the first student to take the entry exam based on the new questions in three of the categories. Also, this target continues to serve as a baseline against which to measure the results of the exit exam.

Measure 1.2 (Direct – Exam; Exit Exam)

Details/Description: In CIS 5950, students will again take the MS in Computer Information Systems knowledge exam. These students will be taking the exam in their last semester (or close to it) and their attempt should reflect the knowledge they have gained through the program.

Acceptable Target: In each category, 75% of students will get all answers correct.

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Ideal Target: In each category, 95% of students will get all answers correct.

Implementation Plan (timeline): This measure should be completed each semester CIS 5950 is offered.

Key/Responsible Personnel: The School of Business faculty teaching CIS 5950 will be responsible for administering the exam.

Finding: The acceptable target was **not met** in every category. The ideal target was **not met** in every category.

Analysis: In 2021-2022, the target was **not** met. The table below shows the results for the 2021-2022 assessment cycle for Measure 1.2.

Table 3: AC 2021-2022 Exit Exam Results

Area	% with No Answers Correct	% with Some Answers Correct	% with All Answers Correct
Programming	0%	0%	100%
Software Applications	0%	67%	33%
Networking	0%	67%	33%
Cyber Security	0%	0%	100%
Databases	67%	33%	0%
Data Analysis	67%	33%	0%
Project Management	0%	100%	0%

Three students took the knowledge exit exam. The acceptable target was **not** met for the knowledge exit exam. The ideal target was **not** met for the knowledge exit exam.

The acceptable target and the ideal target were **met** for the categories of Programming and Cyber Security. The acceptable target and the ideal target were **not** met for the remainder of the categories. As compared to the entry exam, students did the same or better in the categories of Programming, Cyber Security, Databases, and Project Management. As compared to the entry exam, students did worse in the categories of Software Applications, Networking, and Data Analysis.

Based on the analysis of the 2021-2022 results, the faculty implemented the following changes in 2022-2023 to drive the cycle of improvement. First, after teaching the classes a couple of times, the CIS faculty updated the questions in the Databases and Data Analysis categories to align with expectations of what the students would be able to answer after finishing those classes.

Additionally, the faculty continued monitoring these results. While the latest class had to meet the prerequisite standards, the first class did not. Some of those students will graduate in the next couple of years. The CIS faculty will be able to see if a difference

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occurs once that cohort of student has graduated, and the only graduates are those who met the prerequisite standards.

As a results of these changes, in 2022-2023, the target was **not met**. The table below shows the results for the 2022-2023 assessment cycle for Measure 1.2.

Table 4: AC 2022-2023 Exit Exam Results

Area	% with No Answers Correct	% with Some Answers Correct	% with All Answers Correct
Programming	0%	0%	100%
Software Applications	0%	0%	100%
Networking	0%	50%	50%
Cyber Security	0%	0%	100%
Databases	0%	100%	0%
Data Analysis	0%	0%	100%
Project Management	0%	50%	50%

Two students completed the exit exam. The acceptable target and the ideal target were **met** for the categories of Programming, Software Application, Cyber Security, and Data Analysis. The acceptable target and the ideal target were **not met** for the remainder of the categories. As compared to the entry exam, students did the same or better in every category. While being cognizant of the small number of students represented by the results, the higher exit exam scores as compared to the lower entry exam scores is an indicator of learning in the program.

Decision: In 2022-2023, the target was **not met**. Based on the analysis of the 2022-2023 results, the faculty will implement the following changes in 2023-2024 to drive the cycle of improvement. Three categories did not meet the target.

In Networking, the percentage correct understated how the students performed. Each student answered three questions, some with multiple components. To get 100% correct, each student would need to provide five correct answers. The two students provided nine of the ten correct answers. For Networking, we will maintain our current strategies. If students do not meet the targets during the next assessment cycle, further changes will occur.

As with Networking, the percentage correct understated how student performed in the area of Project Management. Each student answered two questions, each with multiple components. In this case, the students got three of the four questions completely correct. For Project Management, we will maintain our current strategies. If students do not meet the targets during the next assessment cycle, further changes will occur.

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For the Database class, the students also performed better than the percentage would indicate. However, some changes in the Database area are already underway. The CIS faculty teach CIS 2980 – Database Systems which is taken by all students pursuing a BS in Computer Information Systems regardless of concentration. The CIS faculty also teach CIS 4000 – Advanced Database Systems which is only taken by students in some concentrations. The CIS 4000 class is taught with the CIS 5200 – Strategic Data Management and Analysis class with extra topics and assignments for the CIS 5200 class. The CIS faculty teaching these classes are revising the topics covered in these classes to better align with what needs to be learned in each area. These changes will be effective Fall 2023.

These changes will improve the student's ability to demonstrate discipline-specific content knowledge thereby continuing to push the cycle of improvement forward.

SLO 2. Analytical Techniques. Students must be able to apply appropriate analytical techniques to identify and frame problems, generate, and compare alternatives, use knowledge of analytic processes and reasoning skills to optimize organizational performance, and understand and use current organizational technologies.

Course Map: Tied to course syllabus objectives. CIS 5950 – Research Project and/or Thesis

Measure 2.1 (Direct – Exam; Entrance Exam)

Details/Description: The unit strives to give students the baseline knowledge exam prior to registration for their first semester. This exam covers key concepts and theories in Computer Information Systems. The exam included multiple choice questions as well as short answer questions. The questions are grouped into categories: Programming, Software Applications, Networking, Cyber Security, Databases, Data Analysis, and Project Management. The exam also includes questions related to analytical techniques and research questions.

Acceptable Target: In the Analytical Techniques category, 50% or more of students will get at least one answer correct.

Ideal Target: In the Analytical Techniques category, 75% or more of students will get at least one answer correct.

Implementation Plan (timeline): This measurement is completed as students are entering the program and registering for classes. Students can enter the program in the spring, summer, or fall semesters.

Key/Responsible Personnel: A faculty member is currently receiving an extra services contract to coordinate the graduate program and is responsible for this administration. Upon determination of a permanent coordinator of the program, that coordinator would be responsible for the administration of the baseline knowledge exam.

Finding: The acceptable target was **not met** in the Analytical Techniques category. The ideal target was **not met** in the Analytical Techniques category.

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Analysis: In AC 2021-2022, the ideal target was not met. The table below shows the results for the 2021-2022 assessment cycle for Measure 2.1.

Table 5: AC 2021-2022 Baseline Knowledge Exam Results

Area	% with No Answers Correct	% with Some Answers Correct	% with All Answers Correct
Analytical Techniques	67%	33%	0%

Three students took the baseline knowledge exam. The acceptable target was not met for the baseline knowledge exam. The ideal target was not met.

Based on the analysis of the 2021-2022 results, the faculty did not implement any changes in 2022-2023 to drive the cycle of improvement. The measurement continued to serve as a baseline measurement against which to compare the growth at the end of the program.

As there were no changes made in 2021-2022, in 2022-2023, the target was not met. The table below shows the results for the 2022-2023 assessment cycle for Measure 2.1.

Table 6: AC 2022-2023 Baseline Knowledge Exam Results

Area	% with No Answers Correct	% with Some Answers Correct	% with All Answers Correct
Analytical Techniques	100%	0%	0%

One student took the baseline knowledge exam so the analysis should be considered with this limited response. The acceptable and ideal targets were not met in the area of Analytical Techniques. Unfortunately, the third-year cohort did not improve compared to the second-year cohort.

Decision:

In 2022-2023, the target was not met. Based on the analysis of the 2022-2023 results, the faculty will implement no changes in 2023-2024 to drive the cycle of improvement. While the scores did not increase in 2023-2024 as compared to 2022-2023, the scores also represented one student.

This measurement continued to serve as a baseline measurement against which to compare the growth at the end of the program.

Measure 2.2 (Direct – Student Artifact; Thesis/Research Project)

Details/Description: In CIS 5950, students will complete and present their thesis or research project. The instructor of the class will utilize a rubric to determine the extent to which the students are able to apply appropriate analytical techniques.

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Acceptable Target: Based on the rubric, 75% of students will score at the highest level for applying appropriate analytical techniques.

Ideal Target: Based on the rubric, 90% of students will score at the highest level for applying appropriate analytical techniques.

Implementation Plan (timeline): This measure should be completed each semester CIS 5950 is offered.

Key/Responsible Personnel: The School of Business faculty teaching CIS 5950 will be responsible for administering the exam.

Finding: Acceptable target was met. Ideal target was met.

Analysis: In the 2021-2022 assessment cycle, the target was not evaluated. The CIS faculty originally planned for the CIS 5900 class to be a Research Methods class while the CIS 5950 class was originally planned to be the class in which students conducted most of the research and wrote the paper. The CIS 5950 instructor designed the rubric based on this original plan. As the first cohort started working through these classes and started approaching IRB and Graduate School due dates, the CIS faculty realized the original plan was not feasible and made changes to the plan for the first cohort. These changes meant the original rubric was not completed for the 2021-2022 assessment cycle.

In 2022-2023, the CIS faculty took the lessons learned from the first cohort of students and made changes to the CIS 5900 and CIS 5950 classes. These classes are now designed in a way so that students can still learn the basics of statistical techniques and research methods, but also complete a research project in a timely manner. Students who choose to do a thesis will work with a major professor to take a different path. Based on this changed approach, the CIS 5950 instructor designed a new rubric that was utilized in the class as well as for this student learning outcome.

As a result of these changes, in AC 2022-2023, the target was met. In CIS 5900, two students earned 18 out of 18 points on the rubric by correctly identifying and applying appropriate analytical techniques to achieve the aim of the student. Analytical techniques include independent samples t-test, multivariate regression, and two chosen from paired sample t-test, ANOVA, Wilcoxon signed-rank test, Pearson correlation, Kruskal Willis test, and Spearman's correlation coefficient.

Decision: In 2022-2023, the target was met. Based on the analysis of the 2022-2023 results, the faculty will implement the following changes in 2023-2024 to drive the cycle of improvement. The changes from 2022-2023 appear to have assisted in enhancing learning in the analytical techniques category. Moving forward, the CIS 5900 and CIS 5950 faculty member(s) will refine the rubric and update resources for the statistical techniques to maintain the high level of learning on the use of appropriate analytical techniques. These changes will improve the student's ability to apply appropriate analytical techniques thereby continuing to push the cycle of improvement forward.

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Measure 2.3 (Direct – Exam; Exit Exam)

Details/Description: In CIS 5950, students will again take the MS in Computer Information Systems knowledge exam. These students will be taking the exam in their last semester (or close to it) and their attempt should reflect the knowledge they have gained through the program.

Acceptable Target: In each category, 75% of students will get all answers correct.

Ideal Target: In each category, 95% of students will get all answers correct.

Implementation Plan (timeline): This measure should be completed each semester CIS 5950 is offered.

Key/Responsible Personnel: The School of Business faculty teaching CIS 5950 will be responsible for administering the exam.

Finding: The acceptable target was **met**. The ideal target was **met**.

Analysis: In 2021-2022, the target was **not** met. The table below shows the results for the 2021-2022 assessment cycle for Measure 2.3.

Table 7: AC 2021-2022 Knowledge Exit Exam Results

Area	% with No Answers Correct	% with Some Answers Correct	% with All Answers Correct
Analytical Techniques	0%	33%	67%

Three students took the knowledge exit exam. The acceptable target was **not** met for the knowledge exit exam. The ideal target was **not** met for the knowledge exit exam.

However, in comparison to the baseline knowledge exam results, the students have improved their overall scores. This increase in scores could reflect their exposure to the statistical tests needed for quantitative research while the missing of the targets could be attributable to a need to delve deeper into this area.

Based on the analysis of the 2021-2022 results, the faculty implemented the following changes in 2022-2023 to drive the cycle of improvement.

The primary change involved the CIS 5900 (Research Methods) and CIS 5950 (Research Project) classes. As originally conceived, the CIS 5900 class was the class where students would develop their research method skills including the proper usage of statistical tests. However, as the first group of students progressed through the class, the CIS faculty realized the class would need to be changed to allow students to meet IRB and Graduate School deadlines. This realization caused a dramatic shift in the way these two courses were presented.

For the 2022-2023 year, the CIS faculty took what we learned during the first cohort and returned CIS 5900 to its original focus as a Research Methods class where statistical

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concepts are reinforced. Students were then able to complete a research project in the CIS 5950 class without having to meet some of the earlier deadlines. If a student wishes to complete a thesis, then that student will work with a major professor on an alternate timeline than the rest of the students.

As a result of these changes, in 2022-2023, the target was **met**. The table below shows the results for the 2022-2023 assessment cycle for Measure 2.3.

Table 8: AC 2022-2023 Knowledge Exit Exam Results

Area	% with No Answers Correct	% with Some Answers Correct	% with All Answers Correct
Analytical Techniques	0%	0%	100%

Two students took the knowledge exit exam. The acceptable target was **met** for the knowledge exit exam. The ideal target was **met** for the knowledge exit exam. In comparison to the baseline knowledge entry exam results, the scores have improved. This increase in scores is likely a reflection of the changes made in the CIS 5900 and CIS 5950 classes.

Decision: In 2022-2023, the target was **met**. Based on the analysis of the 2022-2023 results, the faculty will implement the following changes in 2023-2024 to drive the cycle of improvement. The changes from 2022-2023 appear to have assisted in enhancing learning in the analytical techniques category. Moving forward, the CIS 5900 and CIS 5950 faculty member(s) will refine the rubric and update resources for the statistical techniques to maintain the high level of learning on the use of appropriate analytical techniques. These changes will improve the student's ability to apply appropriate analytical techniques thereby continuing to push the cycle of improvement forward.

SLO 3. Research Proficiency. Students will demonstrate proficiency in evaluating and analyzing CIS research and being able to frame their own research questions.

Course Map: Tied to course syllabus objectives.

CIS 5900 – Research Methods in Computer Information Systems

CIS 5950 – Research Project and/or Thesis

Measure 3.1 (Direct – Exam; Entrance Exam)

Details/Description: The unit strives to give students the baseline knowledge exam prior to registration for their first semester. This exam covers key concepts and theories in Computer Information Systems. The exam included multiple choices questions as well as short answer questions. The questions are grouped into categories: Programming, Software Applications, Networking, Cyber Security, Databases, Data Analysis, and Project Management. The exam also includes questions related to analytical techniques and research questions.

Acceptable Target: In the Research category, 50% or more of students will get at least one answer correct.

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Ideal Target: In the Research category, 75% or more of students will get at least one answer correct.

Implementation Plan (timeline): This measurement is completed as students are entering the program and registering for classes. Students can enter the program in the spring, summer, or fall semesters.

Key/Responsible Personnel: A faculty member is currently receiving an extra services contract to coordinate the graduate program and is responsible for this administration. Upon determination of a permanent coordinator of the program, that coordinator would be responsible for the administration of the baseline knowledge exam.

Finding: The acceptable target was **not met** in the Research category. The ideal target was **not met** in the Research category.

Analysis: In AC 2021-2022, the ideal target was **not** met. The table below shows the results for the 2021-2022 assessment cycle for Measure 3.1.

Table 9: AC 2021-2022 Baseline Knowledge Exam Results

Area	% with No Answers Correct	% with Some Answers Correct	% with All Answers Correct
Research	67%	0%	33%

Three students took the baseline knowledge exam. The acceptable target was **not** met for the baseline knowledge exam. The ideal target was **not** met. The focus of this measurement was to provide a baseline measurement against which to compare the growth at the end of the program.

As there were no changes made in 2021-2022, in 2022-2023, the target was **not** met. The table below shows the results for the 2022-2023 assessment cycle for Measure 2.1.

Table 10: AC 2022-2023 Baseline Knowledge Exam Results

Area	% with No Answers Correct	% with Some Answers Correct	% with All Answers Correct
Research	100%	0%	0%

One student took the baseline knowledge exam so the analysis should be considered with this limited response. The acceptable and ideal targets were **not met** in the area of Research. Unfortunately, the third-year cohort did not improve compared to the second-year cohort.

Decision:

In 2022-2023, the target was not met. Based on the analysis of the 2022-2023 results, the faculty will implement no changes in 2023-2024 to drive the cycle of improvement. While the scores did not increase in 2022-2023 as compared to 2021-2022, the scores also represented

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one student.

This measurement continued to serve as a baseline measurement against which to compare the growth at the end of the program.

Measure 3.2a (Direct – Student Artifact; Thesis/Research Project)

Details/Description: In CIS 5950, students will complete and present their thesis or research project. The instructor of the class will utilize a rubric to determine the extent to which the students are able to frame their own research questions.

Acceptable Target: Based on the rubric, students will score at an average level of 75% or higher on the rubric related to framing their research questions.

Ideal Target: Based on the rubric, student will score at an average level of 90% or higher on the rubric related to framing their research questions.

Implementation Plan (timeline): This measure should be completed each semester CIS 5950 is offered.

Key/Responsible Personnel: The School of Business faculty teaching CIS 5950 will be responsible for administering the exam.

Finding: Target was not met.

Analysis: In the 2021-2022 assessment cycle, the target was not evaluated. The CIS faculty originally planned for the CIS 5900 class to be a Research Methods class while the CIS 5950 class was originally planned to be the class in which students conducted most of the research and wrote the paper. The CIS 5950 instructor designed the rubric based on this original plan. As the first cohort started working through these classes and started approaching IRB and Graduate School due dates, the CIS faculty realized the original plan was not feasible and made changes to the plan for the first cohort. These changes meant the original rubric was not completed for the 2021-2022 assessment cycle.

Three students did complete CIS 5950 successfully in Spring 2022 with two of the students becoming the first graduates of the MS in CIS program. Their route to get to the degree was just a little different than originally planned.

In 2022-2023, the CIS faculty took the lessons learned from the first cohort of students and made changes to the CIS 5900 and CIS 5950 classes. These classes were designed in a way so that students could still learn the basics of statistical techniques and research methods, but also complete a research project in a timely manner. Students who choose to do a thesis will work with a major professor to take a different path. Based on this changed approach, the CIS 5950 instructor designed a new rubric that was utilized in the class as well as for this student learning outcome.

As a results of these changes, in AC 2022-2023, the acceptable target was not met. The ideal target was also not met. Two students took the CIS 5950 class and completed this assignment. One student earned 25 out of 40 points on the assignment while the second

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student earned 19 out of 40 points on the assignment. Thus, the overall average was 55%.

The rubric consisted of analysis based on research questions, problem statement, background of the problem, purpose statement, conceptual framework, significance of the study, and synthesis of knowledge. Unfortunately, students received deductions in every category except the problem statement. The largest deductions occurred in the areas of the research questions, the purpose statement, and the significance of the study.

Decision: In 2022-2023, the target was **not** met. Based on the analysis of the 2022-2023 results, the faculty will implement the following changes in 2023-2024 to drive the cycle of improvement. As this time was the first time for this measurement after the redesign of the course, further refinement of the course is necessary. The CIS 5950 instructor will provide additional resources and guidance specifically focused on the three areas in which the students most struggled. Further resources and examples will be specifically provided in the areas of research questions, the purpose statement, and the significance of the study. These changes will improve the student's ability to frame their own research questions thereby continuing to push the cycle of improvement forward.

Measure 3.2b (Direct – Student Artifact; Thesis/Research Project)

Details/Description: In CIS 5950, students will complete and present their thesis or research project. The instructor of the class will utilize a rubric to determine the extent to which the students are able to demonstrate proficiency in evaluating and analyzing CIS research and being able to design their own research questions.

Acceptable Target: Based on the rubric, students will score at an average level of 75% or higher on the rubric related to designing their research questions.

Ideal Target: Based on the rubric, student will score at an average level of 90% or higher on the rubric related to designing their research questions.

Implementation Plan (timeline): This measure should be completed each semester CIS 5900 is offered.

Key/Responsible Personnel: The School of Business faculty teaching CIS 5900 will be responsible for administering the exam.

Finding: Acceptable target was **met**. Ideal target was **met**.

Analysis: In the 2021-2022 assessment cycle, the target was not evaluated. The CIS faculty originally planned for the CIS 5900 class to be a Research Methods class while the CIS 5950 class was originally planned to be the class in which students conducted most of the research and wrote the paper. The CIS 5950 instructor designed the rubric based on this original plan. As the first cohort started working through these classes and started approaching IRB and Graduate School due dates, the CIS faculty realized the original plan was not feasible and made changes to the plan for the first cohort. These changes meant the original rubric was not completed for the 2021-2022 assessment cycle.

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Three students did complete CIS 5950 successfully in Spring 2022 with two of the students becoming the first graduates of the MS in CIS program. Their route to get to the degree was just a little different than originally planned.

In 2022-2023, the CIS faculty took the lessons learned from the first cohort of students and made changes to the CIS 5900 and CIS 5950 classes. These classes were designed in a way so that students could still learn the basics of statistical techniques and research methods, but also complete a research project in a timely manner. Students who choose to do a thesis will work with a major professor to take a different path. Based on this changed approach, the CIS 5950 instructor designed a new rubric that will be utilized in the class as well as for this student learning outcome.

As a results of these changes, in AC 2022-2023, the acceptable target was met. The ideal target was also met. Two students took the CIS 5900 class and completed this assignment. Both students earned 50 out of 50 points on the assignment. Thus, the overall average was 100%.

Decision: In 2022-2023, the target was met. Based on the analysis of the 2022-2023 results, the faculty will implement the following changes in 2023-2024 to drive the cycle of improvement. The aforementioned changes related to refining the course to provide more resources related to research questions, the purpose statement, and the significance of the study will also assist in maintaining the high level of success in this measure. These changes will improve the student's ability to design their own research questions thereby continuing to push the cycle of improvement forward.

Measure 3.3 (Direct – Exam; Exit Exam)

Details/Description: In CIS 5950, students will again take the MS in Computer Information Systems knowledge exam. These students will be taking the exam in their last semester (or close to it) and their attempt should reflect the knowledge they have gained through the program.

Acceptable Target: In each category, 75% of students will get all answers correct.

Ideal Target: In each category, 95% of students will get all answers correct.

Implementation Plan (timeline): This measure should be completed each semester CIS 5950 is offered.

Key/Responsible Personnel: The School of Business faculty teaching CIS 5950 will be responsible for administering the exam.

Finding: Acceptable target was met. Ideal target was met.

Analysis: In 2021-2022, the target was met. The table below shows the results for the 2021-2022 assessment cycle for Measure 3.3.

Table 11: AC 2021-2022 Knowledge Exit Exam Results

Assessment Cycle 2022 – 2023

Area	% with No Answers Correct	% with Some Answers Correct	% with All Answers Correct
Research	0%	0%	100%

Three students took the knowledge exit exam. The acceptable target was **met** for the knowledge exit exam. The ideal target was **met** for the knowledge exit exam.

In comparison to the baseline knowledge exam results, the students have improved their overall scores. This increase in scores shows students have enhanced their research skills even with the unexpected changes that were made in the CIS 5900 and CIS 5950 classes.

Based on information gathered from the analysis of the 2021-2022 results, the faculty implemented the following changes in 2022-2023 to drive the cycle of improvement.

The primary change involved the CIS 5900 (Research Methods) and CIS 5950 (Research Project) classes. As originally conceived, the CIS 5900 class was the class where students would develop their research method skills including the proper usage of statistical tests. However, as the first group of students progressed through the class, the CIS faculty realized the class would need to be changed to allow students to meet IRB and Graduate School deadlines. This realization caused a dramatic shift in the way these two courses were presented.

For the 2022-2023 year, the CIS faculty took what we learned during the first cohort and returned CIS 5900 to its original focus as a Research Methods class where statistical concepts are reinforced. Students then completed a research project in the CIS 5950 class without having to meet some of the earlier deadlines. If a student wishes to complete a thesis, then that student will work with a major professor on an alternate timeline than the rest of the students.

Finally, the professor also made some slight changes to the wording on the exit exam research questions to make them a little clearer for students.

As a result of these changes, in 2022-2023, the target was **met**. The table below shows the results for the 2022-2023 assessment cycle for Measure 2.3.

Table 12: AC 2022-2023 Knowledge Exit Exam Results

Area	% with No Answers Correct	% with Some Answers Correct	% with All Answers Correct
Research	0%	0%	100%

Two students took the knowledge exit exam. The acceptable target was **met** for the knowledge exit exam. The ideal target was **met** for the knowledge exit exam. In comparison to the baseline knowledge entry exam results, the scores have improved. This increase in scores is likely a reflection of the changes made in the CIS 5900 and CIS 5950 classes.

Assessment Cycle 2022 – 2023

Decision: In 2022-2023, the target was **met**. Based on the analysis of the 2022-2023 results, the faculty will implement the following changes in 2023-2024 to drive the cycle of improvement. The changes related to refining the course to provide more resources related to research questions, the purpose statement, and the significance of the study will also assist in maintaining the high level of success in this measure. These changes will improve the student's ability to frame and design their own research questions thereby continuing to push the cycle of improvement forward.

Comprehensive Summary of Key evidence of improvement based on the analysis of results. The following reflects all the changes implemented to drive the continuous process of seeking improvement in AC 2022-2023. These changes are based on the knowledge gained through the analysis of the AC 2021-2022 results.

The 2022-2023 year was the third year of offering the MS in Computer Information Systems. Data collection occurred for the first time under the revised CIS 5900 and CIS 5950 classes.

The changes implemented in those classes led to increase proficiency in the research and analytical techniques areas. Based on the comparison of entrance exams and exit exams, students are increasing their knowledge in the areas of research proficiency and analytical techniques. Students scored a 100% on the research proficiency and analytical techniques area.

The two students also scored a 100% on the measurement related to applying appropriate analytical techniques in the thesis or research project as well as scoring a 100% on the measurement related to designing their own research questions. The students did not perform as well on framing their research questions.

The area has collected data from one student for the baseline knowledge exam. In three of the categories, the student **met** the acceptable and ideal targets. In four of the categories, the students did **not** meet either target. These results were worse than the 2021-2022 year.

The area has also collected data from two students for the exit exam. In four of the categories, the students were meeting the acceptable and ideal targets. In the remaining categories, the students were meeting neither target.

Plan of Action moving forward.

Based on analysis of the 2022-2023 results, the Computer Information Systems area has made decisions to improve student learning and success.

First, the faculty will determine the topics to be covered in CIS 2980 – Database Systems, CIS 4000 – Advanced Database Systems, and CIS 5200 – Strategic Data Management and Analysis. The topics included in each class will be applicable to the learning objectives appropriate for the students in those classes.

Second, faculty members teaching CIS 5900 and CIS 5950 will refine the rubric and resources provided for the analytical techniques show in the class. Additionally, the faculty members will provide more resources and guidance on the areas in which

Assessment Cycle 2022 – 2023

students struggled the most. Those areas were research questions, the purpose statement, and the significance of the study.

While not directly related to the 2022-2023 student learning outcomes, the CIS faculty will also be pursuing the creation of a 4+1 agreement to allow more students in the BS in CIS program to concurrently pursue the MS in CIS.