SAINT LOUIS UNIVERSITY.

Program-Level Assessment: Annual Report

Program Name (no acronyms): **Medical Sciences (MSCI), formerly Investigative & Medical Sciences (Medical Sciences)**

Department: **Clinical Health Sciences (CHS)**

Degree or Certificate Level: **BS**

College/School: **Doisy College of Health Sciences**

Date (Month/Year): **10/1/2023**

Assessment Contact: **Minh Kosfeld**

In what year was the data upon which this report is based collected? **2022-2023**

In what year was the program's assessment plan most recently reviewed/updated? **2022**

Is this program accredited by an external program/disciplinary/specialized accrediting organization or subject to state/licensure requirements? **No**

If yes, please share how this affects the program's assessment process (e.g., number of learning outcomes assessed, mandated exams or other assessment methods, schedule or timing of assessment, etc.):

1. Student Learning Outcomes

Which of the program's student learning outcomes were assessed in this annual assessment cycle? (Please provide the complete list of the program's learning outcome statements and **bold** the SLOs assessed in this cycle.)

PLO #1: Students will demonstrate the Jesuit value of "Women & Men for and with Others" to promote service in the medical sciences.
PLO #2: Students will deliver a clear description of a medical sciences project.
PLO #3: Students will critically evaluate data in the medical sciences.
PLO #4: Students will apply clinical knowledge to interpret medical science data to develop a differential diagnosis.
PLO #5: Students will display knowledge of professional and ethical behaviors necessary to work effectively in an interdisciplinary team.

2. Assessment Methods: Artifacts of Student Learning

Which artifacts of student learning were used to determine if students achieved the outcome(s)? Please describe the artifacts in detail, identify the course(s) in which they were collected, and if they are from program majors/graduates and/or other students. Clarify if any such courses were offered a) online, b) at the Madrid campus, or c) at any other off-campus location.

PLO #1: Students will demonstrate the Jesuit value of "Women & Men for and with Others" to promote service in the medical sciences.

Artifact 1A- Service Reflection Assignment/BLS 1100 Foundations of Medical Sciences
Artifact 1B- Service Reflection Assignment/BLS 4411 Fundamentals of Immunology

The assessment of students' grasp of the Jesuit value 'Women & Men for and with Others,' as well as their development in this regard, was established through a Service Reflection assignment undertaken in two distinct courses: freshman-level BLS 1100 and junior-level BLS 4411. In both courses, students were tasked with researching the significance of the Jesuit value, engaging in community service, and subsequently composing a paper that reflects on how this value manifested in their service endeavors (refer to Appendix A).

Most students enrolled in BLS 1100 were freshmen with limited familiarity with Jesuit values and minimal service exposure. Consequently, their data provides a foundational point of reference from which we can assess progression. Conversely, most students in BLS 4411 were juniors who had amassed substantial service experience as part of their preparation for post-graduate medical program applications. As such, their data served as an indicator of students' advanced achievement of this Program Learning Outcome (PLO).

PLO #3: Students will critically evaluate data in the medical sciences.

Artifact 3A- Hematology Case Study Analysis/BLS 1100 Foundations of Medical Sciences
Artifact 3B- Hematology Case Study Analysis/BLS 4210 Hematology

The assessment of students' ability to critically evaluate medical science data and track their progression was based on two hematology case assignments. The first assignment was simpler and completed in a freshman-level course, BLS 1100, while the second, more complex assignment was undertaken in a senior-level course, BLS 4210.

In these case assignments, students were required to critically evaluate laboratory data to select the most applicable test results and assess their quality for diagnosing blood disorders. By comparing data between senior and freshman students, we gained insight into their progression in this PLO as they advanced through the program (refer to Appendix B).

It's worth noting that the first hematology case assignment served as a substitute for the intended Hematology Laboratory Report, originally part of the freshman-level course BLS 1150, Foundations of Medical Laboratory Science Lab. This report would have assessed students' ability to count different types of blood cells and evaluate the accuracy and appropriateness of their results for disease diagnosis. Unfortunately, the course became unavailable, necessitating the substitution.

PLO #4: Students will apply clinical knowledge to interpret medical science data to develop a differential diagnosis.

Artifact 4A- Chemistry Case Study Analysis/BLS 1100 Foundations of Medical Sciences
Artifact 4B- Chemistry Case Study Analysis/BLS 4110 Medical Biochemistry I

The assessment of students' ability to apply clinical knowledge to diagnose medical cases was based on two chemistry case studies. The first, a simpler assignment, was completed in the freshman-level course BLS 1100, while the second, more extensive one, was undertaken in the junior-level course BLS 4110.

In these case assignments, students were tasked with applying their clinical knowledge to interpret laboratory data for diagnosing diabetes. The second case also involved assessing treatment compliance and monitoring diabetic complications. By comparing student outcomes between these two distinct courses, we aimed to assess whether students had reached a higher level of proficiency in this PLO (refer to Appendix C).

It's worth noting that the first chemistry case assignment served as a substitute for the originally intended Chemistry Laboratory Report, which was part of the freshman-level course BLS 1150, Foundations of Medical Laboratory Science Lab. This report would have evaluated students' ability to measure blood glucose levels and interpret the results for diabetes diagnosis. Unfortunately, the course's unavailability necessitated this substitution.

All the above courses are intended for program majors, and none of them were offered online or at the Madrid campus or other off-campus locations.

3. Assessment Methods: Evaluation Process

What process was used to evaluate the artifacts of student learning, and by whom? Please identify the tools(s) (e.g., a rubric) used in the process and **include them in/with this report document** (please do not just refer to the assessment plan).

NOTE: For all artifacts for PLO's # 1, 3 and 4:

The instructors responsible for each PLO assigned relevant assignments to their students during the assessment cycle semester. At the end of each semester, the program director collected artifacts from these courses and evaluated them using rubrics intentionally designed to align with the Program Assessment Plan and their associated PLOs (see Appendix D). Following the assessment, the program director discussed the results with the responsible instructors. These collaborative conversations focused on the strengths and weaknesses of student learning in the program in relation to the PLOs. Information gleaned from this will guide curricular or pedagogical remedies if warranted.

PLO #1: Students will demonstrate the Jesuit value of "Women & Men for and with Others" to promote service in the medical sciences.

Artifact 1A- Service Reflection Assignment/BLS 1100 Foundations of Medical Sciences
Artifact 1B- Service Reflection Assignment/BLS 4411 Fundamentals of Immunology

When evaluating Service Reflection papers, the program director looked for evidence of students' appreciation for the impact of the Jesuit value 'Women & Men for and with Others' in their service learning (see Appendix A). Students who demonstrated an understanding of the Jesuit value were assigned the 'Introduce' ranking, those who discussed its impact on their service activities received the 'Reinforce' ranking, and those who proposed its integration into healthcare services achieved the 'Master' ranking.

PLO #3: Students will critically evaluate data in the medical sciences.

Artifact 3A- Hematology Case Study Analysis/BLS 1100 Foundations of Medical Sciences
Artifact 3B- Hematology Case Study Analysis/BLS 4210 Hematology

The program director assessed students' critical thinking skills by evaluating each artifact based on specific questions outlined in the assignments (see Appendix B). Students who could select relevant laboratory data for a disease condition were ranked as 'Introduce,' those who could assess the quality of the data were ranked as 'Reinforce,' and those who could propose additional data to confirm a diagnosis were ranked as 'Master.

PLO #4: Students will apply clinical knowledge to interpret medical science data to develop a differential diagnosis.

Artifact 4A- Chemistry Case Study Analysis/BLS 1100 Foundations of Medical Sciences
Artifact 4B- Chemistry Case Study Analysis/BLS 4110 Medical Biochemistry I

The program director assessed students' knowledge application skills by evaluating each artifact based on specific questions outlined in the assignments (see Appendix C). Students who recognized abnormal laboratory results were ranked as 'Introduce,' those who intelligently discussed the clinical significance of these results were ranked as 'Reinforce,' and those who proposed a correct diagnosis based on the abnormal laboratory results achieved the 'Master' ranking.

See Appendix for the Assignments and PLO Rubric

4. Data/Results

What were the results of the assessment of the learning outcome(s)? Please be specific. Does achievement differ by teaching modality (e.g., online vs. face-to-face) or on-ground location (e.g., STL campus, Madrid campus, other off-campus site)?

NOTE: For all artifacts for PLO's # 1, 3 and 4:
The program's assessment plan set a target at the College's standard rate of 85% or higher, as established by the former Dean of the Doisy College of Health Sciences. This benchmark specifies that, on average, 85% of freshmen should demonstrate the 'Introduce' ranking on the corresponding PLO rubric, reflecting entry-level knowledge or comprehension. Similarly, an average of 85% of advanced students should demonstrate the 'Reinforce' ranking, indicating the application of knowledge. The PLO rubric also includes the 'Master' ranking for students displaying higher-level synthesis or evaluation skills.

PLO #1: Students will demonstrate the Jesuit value of "Women & Men for and with Others" to promote service in the medical sciences.

Artifact 1A- Service Reflection Assignment/BLS 1100 Foundations of Medical Sciences

89% Medical Sciences freshmen (32/36) achieved the ranking of "Introduce". **Met**
89% Medical Sciences freshmen (32/36) achieved the ranking of "Reinforce".
61% Medical Sciences freshmen (22/36) achieved the ranking of "Master".

Artifact 1B- Service Reflection Assignment/BLS 4411 Fundamentals of Immunology

85% Medical Sciences juniors (23/27) achieved the ranking of "Introduce".
81% Medical Sciences juniors (22/27) achieved the ranking of "Reinforce". **Not Met**
15% Medical Sciences juniors (4/27) achieved the ranking of "Master".

While 89% of freshmen achieved the 'Introduce' ranking, only 81% of juniors reached the 'Reinforce' ranking. Therefore, the program target for this PLO has not been met. For those not meeting the 'Introduce' ranking, their reflections either fail to address or define the 'Women & Men for and with Others' Jesuit value. For those not reaching the 'Reinforce' ranking, their reflections described their service experiences but did not reflect on its impact as prompted by the provided rubric.

The course delivery format (in-person) had no obvious effect on the data/results for PLO #1.

PLO #3: Students will critically evaluate data in the medical sciences.

Artifact 3A- Hematology Case Study Analysis/BLS 1100 Foundations of Medical Sciences

100% Medical Sciences freshmen (35/35) achieved the ranking of "Introduce". **Met**
6% Medical Sciences freshmen (2/35) achieved the ranking of "Reinforce".
74% Medical Sciences freshmen (26/35) achieved the ranking of "Master".

Artifact 3B- Hematology Case Study Analysis/BLS 4210 Hematology

100% Medical Sciences seniors (19/19) achieved the ranking of "Introduce".
100% Medical Sciences seniors (19/19) achieved the ranking of "Reinforce". **Met**
90% Medical Sciences seniors (17/19) achieved the ranking of "Master".

Strictly speaking, the program target for this PLO is met since 100% of freshmen achieved the 'Introduce' ranking, and 100% of seniors attained the 'Reinforce' ranking. However, considering the low number of freshmen achieving the 'Reinforce' ranking, this achievement should be interpreted cautiously, as up to 94% of the freshmen failed to evaluate the quality of clinical data.

The course delivery format (in-person) had no obvious effect on the data/results for PLO #3.

PLO #4: Students will apply clinical knowledge to interpret medical science data to develop a differential diagnosis.

Artifact 4A- Chemistry Case Study Analysis/BLS 1100 Foundations of Medical Sciences

47% Medical Sciences freshmen (17/36) achieved the ranking of "Introduce". **Not Met**
86% Medical Sciences freshmen (17/36) achieved the ranking of "Reinforce".
97% Medical Sciences freshmen (17/36) achieved the ranking of "Master".

Artifact 4B- Chemistry Case Study Analysis/BLS 4110 Medical Biochemistry I

100% Medical Sciences juniors (25/25) achieved the ranking of "Introduce".
100% Medical Sciences juniors (25/25) achieved the ranking of "Reinforce". **Met**
92% Medical Sciences juniors (23/25) achieved the ranking of "Master".

While only 47% of freshmen were able to achieve the 'Introduce' ranking, 100% of juniors achieved the 'Reinforce' ranking, with 92% even reached the 'Master' ranking. This suggests that the program target for this PLO is met at the higher level despite not being met at the entry level. For those not reaching the "Introduce" ranking, they could not determine how to identify abnormal clinical data. For those not reaching the "Reinforce" ranking, they did not explain the clinical relevance of abnormal clinical data.

The course delivery format (in-person) had no obvious effect on the data/results for PLO #4.

5. Findings: Interpretations & Conclusions

What have you learned from these results? What does the data tell you? Address both a) learning gaps and possible curricular or pedagogical remedies, and b) strengths of curriculum and pedagogy.

PLO #1: Students will demonstrate the Jesuit value of "Women & Men for and with Others" to promote service in the medical sciences.

All Medical Sciences students aspire to become healthcare professionals, making it crucial to instill in them a willingness to help those in need. This quality is fundamental to their chosen profession and a key program outcome. PLO #1 is assessed in two courses across the Medical Sciences curriculum during the first- and

third-year using service reflection assignments (Artifact 1A and 1B). In these assignments, students are required to demonstrate their understanding and appreciation of the Jesuit value of 'Women & Men for and with Others' in their service-learning experiences.

Strengths: Most freshmen (89%) demonstrated their understanding and were able to recognize the impact of the Jesuit value in their service-learning activities. Surprisingly, many (61%) went a step further by proposing service activities in medical science settings. This level of engagement was unexpected, considering these are the students' first courses in the program where this outcome is being introduced and developed.

Weaknesses: However, there were shortcomings among juniors. As many as 19% failed to analyze the effects of the Jesuit value, and only 15% proposed service activities in their future careers.

Data from these artifacts indicate that the program has not achieved this outcome at the upperclassmen level, despite meeting the benchmark in their freshman year. Upon reviewing the assignments, the program director identified a significant factor contributing to these weaknesses. All Medical Sciences students engage in extensive service activities while at SLU, starting with an assignment in their freshman Foundations course and continuing outside the classroom. Unfortunately, many students did not adequately describe their understanding or appreciation of these service activities in their reflections. Consequently, they fell short of meeting the criteria specified in the PLO rubric. These oversights explain the lower rankings for upperclassmen and, consequently, underestimate the program's progression for this PLO.

In response to these findings, the program director is exploring options to enhance this outcome, including modifying the rubrics and/or adjusting the pedagogy.

PLO #3: Students will critically evaluate data in the medical sciences.

In preparation for a career in medical science, it is crucial for Medical Sciences students to critically evaluate data for accuracy and applicability when diagnosing clinical conditions. PLO #3 is assessed in two courses across the Medical Sciences curriculum during the first and fourth year, utilizing hematology case studies (Artifact 3A and 3B). In these assignments, students are required to select appropriate laboratory data and assess their quality to diagnose hematologic conditions.

Strengths: Data from Artifact 3A and 3B reveal that both cohorts have achieved their assigned benchmarks, indicating the program's successful attainment of this outcome. Moreover, the data suggests that students are performing exceptionally well, with 90% of Medical Sciences seniors able to propose additional tests needed to confirm a diagnosis, achieving the 'Master' level. A comparison between cohorts highlights two key trends evidencing the program's success in enhancing students' critical analytical skills: more seniors than freshmen met each ranking level in the PLO rubric, and this achievement occurred even with a more complex patient case.

Weaknesses: While the data support the program's strength in this PLO, specific areas for improvement have been identified. Given that the Foundations course is introductory, it's understandable that freshmen did not meet the 'Master' ranking benchmark of 85% (74% achieved it). However, the concern lies in the low 6% achievement rate at the 'Reinforce' level, prompting a review of the assignment and pedagogy.

Upon reviewing the assignments, the director attributed the low score in this outcome to the substitution of the case study assignment for a lab report since the rubric was tailored more toward the lab report. Additionally, the poor assessment results may stem from freshmen's failure to evaluate laboratory data for accuracy and applicability in diagnosing a given clinical condition. Considering that Medical Sciences freshmen can no longer participate in the BLS 1150 Foundations of Medical Laboratory Science Lab course, where they would learn how clinical data are generated and the issues affecting data quality, this result is likely. The program director is currently exploring options to enhance this outcome, including modifying the assignment, rubrics, assessment plan, pedagogy, or the curriculum.

PLO #4: Students will apply clinical knowledge to interpret medical science data to develop a differential diagnosis.

One of the primary goals of the Medical Sciences program is to empower students with the ability to apply the medical knowledge they acquire throughout the program to develop a differential diagnosis. PLO #4 is assessed in two courses across the Medical Sciences curriculum during the first and third year, utilizing two chemistry case studies (Artifact 4A and 4B). In these assignments, students are required to utilize their knowledge of medical sciences to propose a diagnosis.

Strengths: Data from Artifact 4A and 4B reveal that the program has successfully achieved this outcome, with both cohorts meeting the 'Reinforce' benchmark. The program director is particularly pleased with the

high number of students reaching the 'Master' level by proposing a correct diagnosis based on relevant abnormal laboratory results (97% freshmen and 92% juniors). While this highest ranking is not mandatory, its consistent attainment underscores the program's effectiveness in striving for this PLO.

Weaknesses: Despite meeting the more advanced benchmarks, 53% of freshmen did not reach the 'Introduction' level in this outcome. Such a discrepancy prompted a review of the assignment and pedagogy.

Upon reviewing the assignments, the director attributed the low score in this outcome to the substitution of the case study assignment for a lab report, as the rubric was tailored more toward the lab report format. The poor assessment results may also stem from freshmen's difficulty in identifying abnormal clinical data. The program director wasn't surprised by this result for two reasons: firstly, the Foundations course is the initial course in the program sequence, and this outcome is being introduced and developed, serving as the entry-level students' first opportunity to bridge didactic knowledge with clinical practice. Secondly, like Artifact 3A, Artifact 4A transitioned from a hands-on lab approach to a lecture format, as students can no longer participate in the BLS 1150 Foundations of Medical Laboratory Science Lab course. In that course, they learn which test range is appropriate to evaluate pathophysiologic conditions.

In response to these findings, the program director is exploring options to enhance this outcome. Potential strategies include modifying the assignment, rubrics, assessment plan, pedagogy, or the curriculum.

6. Closing the Loop: Dissemination and Use of Current Assessment Findings

A. When and how did your program faculty share and discuss the results and findings from this cycle of assessment?

The program director conducts dedicated assessment review meetings with faculty members associated with the action item every fall (September). In these meetings, the program director and faculty assess the current data and compare it with trends from the previous year's assessment cycle to identify strengths and weaknesses of the program. This collaborative effort results in pinpointing opportunities for improvement and guides the ongoing refinement of program courses, curricula, and pedagogical approaches. Changes, when necessary, are formulated with input from the faculty to ensure their appropriateness and relevance for both the associated course(s) and the overall program. Subsequently, the program director updates the Program Assessment Plan and Program Rubric, recording notes for all changes made.

B. How specifically have you decided to use these findings to improve teaching and learning in your program? For example, perhaps you've initiated one or more of the following:

Changes to the Curriculum or Pedagogies	• Course content • Teaching techniques • Improvements in technology • Prerequisites	• Course sequence • New courses • Deletion of courses • Changes in frequency or scheduling of course offerings
Changes to the Assessment Plan	• Student learning outcomes • Artifacts of student learning • Evaluation process	• Evaluation tools (e.g., rubrics) • Data collection methods • Frequency of data collection

Please describe the actions you are taking as a result of these findings.

Faculty agreed to continue to use reflection assignments and case studies in program content courses to judge student learning and developing in medical sciences. However, several changes have been proposed for improved assessment.

PLO #1: Students will demonstrate the Jesuit value of "Women & Men for and with Others" to promote service in the medical sciences.

The common factor in cases where students did not meet the ranking criteria is their failure to appropriately address the rubric criteria in their reflection assignments. The program director believes that the assessment measures need revision to accurately capture student performance. Therefore, faculty members will enhance the assessment process by providing more transparent assignment directions. This will involve adding specific prompts and assignment rubrics for both artifacts. These action items are expected to result in more relevant data

for assessing this PLO during the academic year 2024-2025.

PLO #3: Students will critically evaluate data in the medical sciences.

PLO #4: Students will critically evaluate data in the medical sciences.

The program director has identified three changes for improvement, despite the program mostly meeting the established benchmark for both Outcomes 3 and 4.

1. Change to the Assessment Tool: While case studies were used for both PLOs instead of the intended lab reports for freshmen, the rubric was still tailored toward the lab report, which partly explains the poor results. The program will continue to use case studies to collect data for these outcomes. However, artifacts and assignment rubrics will be revised to ensure alignment with the PLOs for appropriate assessment.
2. Changes to the Assessment Plan: Due to overlaps in assessment criteria for both PLOs involving medical sciences data, the program director proposed combining them into one. This change offers the advantages of rating students in the senior year instead of at the junior level and creating more complex patient cases to evaluate students' learning more effectively. The current artifacts appear overly simplistic given the many perfectly achieved benchmarks.
3. Changes to the Curriculum: For PLO #3 and #4, the recent removal of the laboratory portion of the Foundations course has negatively impacted freshmen's ability to identify abnormal clinical data and evaluate them for accuracy and applicability. As a solution, the program will discuss the possibility of reinstating the lab course to enhance students' practice in evaluating clinical data and applying their clinical knowledge to develop a differential diagnosis.

If no changes are being made, please explain why.

NA

7. Closing the Loop: Review of Previous Assessment Findings and Changes

A. What is at least one change your program has implemented in recent years **as a result of previous assessment data**?

PLO #1: Students will demonstrate the Jesuit value of "Women & Men for and with Others" to promote service in the medical sciences.

Based on the analysis of the 2020-2021 Assessment Plan for PLO #1, faculty members revised Artifact 1B and its rubrics to specify the Jesuit value "Women & Men for and with Others." This action is intended to provide clearer guidance to students, encouraging them to be more specific in their reflections, which are then used for evaluation purposes.

PLO #3: Students will critically evaluate data in the medical sciences.

In the academic year 2020-2021, it was decided to provide specific prompts and assignment rubrics for both artifacts to ensure transparent directions. This initiative aims to guide students in providing more specific responses, thereby generating more relevant data for assessing this PLO.

PLO #4: Students will apply clinical knowledge to interpret medical science data to develop a differential diagnosis.

In the academic year 2020-2021, it was decided to modify Artifact 4B to be more complex, with the goal of expanding the scope of data and facilitating higher student achievement for this PLO.

B. How has the change/have these changes identified in 7A been assessed?

At the end of each assessment cycle, the impact of changes informed by assessment is evaluated. Student achievement data from the current cycle year (AY22-23) were assessed according to the guidelines specified in

section 3 above. This evaluation utilized the revised PLO, artifacts, or assessment rubrics as outlined in the most recent Assessment Plan (refer to Appendix D). The program director then compared the new assessment results with those from previous cycle years to identify trends and contemplate appropriate responses.

C. What were the findings of the assessment?

PLO #1: Students will demonstrate the Jesuit value of "Women & Men for and with Others" to promote service in the medical sciences.

Despite emphasizing only one Jesuit value, student performance related to this outcome declined at both levels compared to the 2020-2021 assessment. Moving forward, the program will maintain its focus on the chosen Jesuit value but will enhance clarity in directions and assess the impact of these changes in future cycles.

Artifact	Ranking	AY18-19	AY20-21	AY22-23
1A	Introduce	100% (29/29)	96% (24/25)	89 (32/36)
1B	Reinforce	74% (20/27)	86% (19/22)	81 (22/27)

PLO #3: Students will critically evaluate data in the medical sciences.

The program director and faculty observed that students performed exceptionally well on the assignment, considering the changes implemented since the 2020-2021 assessment cycle. The addition of assignment rubrics for both artifacts resulted in a positive trend in both cohorts. Consequently, the program will continue to assess these changes in future cycles to monitor their impact.

Artifact	Ranking	AY18-19	AY20-21	AY22-23
3A	Introduce	100% (28/28)	96% (24/25)	100% (35/35)
3B	Reinforce	86% (18/21)	86% (18/21)	100% (19/19)
3B	Master	94% (/21)	90% (19/21)	90% (17/19)

PLO #4: Students will apply clinical knowledge to interpret medical science data to develop a differential diagnosis.

Breaking down questions with multiple components into detailed individual questions in Artifact 4B significantly enhanced outcomes, meeting the intended "Reinforce" benchmark for juniors in this assessment cycle. The program plans to persist in using this approach, with revisions applied to Artifact 4A as described in 6B and will continue to assess the impact of these changes in future cycles.

Artifact	Ranking	AY20-21	AY22-23
4A	Introduce	83% (19/23)	47% (17/36)
4B	Reinforce	96% (2324)	100% (22/25)
4B	Master	100% (24/24)	92% (23/25)

D. How do you plan to (continue to) use this information moving forward?

So far, we are pleased with the assessment process and the results stemming from the changes made in 2020-2021. Moving forward, our intention is to continue gathering data for all PLOs to analyze trends. This analysis will involve comparing students' performance between courses and assessment cycles, enabling us to evaluate the efficacy of our curriculum and assess student success.

The utilization of a robust and methodical evaluation plan has proven invaluable in providing the necessary data upon which to base curricular decisions. The evaluation of the Academic Year 2020-2021 data indicates that the courses and artifacts align well with PLO #1. However, it has been noted that the instruction for the assignment could be more precise. Furthermore, it has been suggested to combine PLO #3 and #4. This consolidation would not only provide the program with opportunities to create more challenging assignments but also facilitate the assessment of students' learning near the end of their college career.

In response to these insights, the revised assessment plan and PLO rubric have been updated to reflect these changes, ensuring a continuous improvement process in the program (refer to Appendix E).

IMPORTANT: Please submit any assessment tools (e.g., artifact prompts, rubrics) with this report as separate attachments or copied and pasted/appended into this Word document. Please do not just refer to the assessment plan; the report should serve as a stand-alone document. Thank you.

Appendix A
PLO #1- Service Reflection Assignment
Fall 2022

Purpose: These assignments are crafted to assess Program Learning Outcome #1, which centers on students' capacity to exemplify the Jesuit value of "Women & Men for and with Others," thereby fostering service within the realm of medical sciences.

1A: Service Reflection Assignment /BLS 1100 Foundations of MSCI

Assignment instructions: This assignment has two parts:

1. Service-Learning Activity: participate in and document at least 5 hours of community service. Information on how to find suitable projects and the documentation form will be provided in class.

2. Service-Learning Paper: submit a reflection paper about the service experience.

   –The paper format:
   - 1 page in length with one-inch margins
   - Typed in font size 11 (Arial or Times Roman typeface preferred)
   - Double spaced

Grading: the following grading criteria will apply.

Grading Criteria: Points/Possible Points

1. Form documenting service hours _____/10 points
2. Reflection paper _____/20 points

Service-Learning Hours Form

Total Service Hours Required for Course: 5 hours
Hours Completed: _____

Community Partner	Date and Times	Number of Hours completed	Name and email address of the Contact Person

Reflection Paper Grading Rubric

	Knowledge **Knowledge/Comprehension**	**Application** **Application/Analysis**	**Synthesis** **Synthesis/Evaluation**
• Content Knowledge: _____/6 Application: _____/6 Synthesis: _____/6	• Interpret the Jesuit value "Men and Women for and with Others."	• Examine the impact of the Jesuit value "Men and Women for and with Others" in your volunteer, shadowing, or work experiences.	• Propose an action beyond the expected healthcare service that demonstrates the Jesuit value "Men and Women for and with Others"
• Organization and clarity: _____/1	• Connection from one concept to another lacking. Difficult to follow thought process.	• Minor difficulties in transitioning from one thought to another.	• Clear expression of ideas throughout paper.
Spelling and grammar: _____/1	• Poor sentence structure, consistent grammatical and spelling errors. Clearly not proofed or "spell-checked" appropriately.	• Inconsistent sentence structure, occasional grammatical and spelling errors. Needs improvement.	• Good sentence structure, no errors in grammar or spelling.

This assignment is due on **12/06/22**. There will be no make-up and a late assignment will result in a score reduction as stated in the syllabus.

1B: Service Reflection Assignment /BLS 4411 Fundamentals of Immunology

Based on your volunteer and shadowing experiences, this assignment involves writing a paper that reflects your understanding of "Men and Women for and with others" and the impact of this value on health professions.

Paper Format

- 1-inch margins
- Size 11 fonts (Ariel or Times Roman typeface preferred)
- Double spaced
- 1-page in length

Grading

This assignment is worth 10 points and is due on **November 3rd**. The following grading criteria will apply. The assignment is to be done in CANVAS and submitted through CANVAS as a Word document. There will be no make-up assignment and a late assignment will not be accepted: late assignments will receive a zero.

Grading Criteria

- Knowledge/Comprehension _____/3 points
- Application/Analysis _____/3 points
- Synthesis/Evaluation _____/3 points
- Organization/Clarity _____/1 point

Grading Rubric

Program Learning Outcome (PLO#1): Students will demonstrate "Men and Women for and with Others" to promote service in the medical sciences.		
Introduce Knowledge/Comprehension (0-3 points)	**Reinforce Application/Analysis (0-3 points)**	**Master Synthesis/Evaluation (0-3 points)**
Interpret the value "Men and Women for and with Others."	Examine the impact of the value "Men and Women for and with Others" in volunteer, shadowing or work experiences.	Propose an action in the performance of healthcare service activities that demonstrates "Men and Women for and with Others"
Organization and Clarity (1 point)		
Good sentence structure, easy to follow, no errors in grammar or spelling.		

Appendix B
PLO #3- Hematology Assignments
Fall 2022

Purpose: These assignments are designed to evaluate Program Learning Outcome #3, which focuses on students' ability to critically assess data in the field of medical sciences.

3A: Hematology Brain Teasers/BLS 1100 Foundations of Medical Sciences

Assignment instructions:

To earn up to 3 bonus points on your Hematology quiz this week, please provide comprehensive responses to the following questions using insights from this week's lecture and classroom discussions.

1. Increase in which blood cells would be most consistent with a bacterial infection?

2. Based on the instructions for examining the peripheral blood smear, what one misstep could explain why the morphology of the WBCs you see on your slide is distorted and your differential counts differ from those written on the board?

3. If the WBC data from a manual peripheral blood smear evaluation are consistent with a bacterial infection, what other lab test beside hematology could aid in confirming the diagnosis?

3B: RBC Disorders Case/BLS 4210 Hematology

Drawing from the lecture and class discussion, examine the data presented in the following case and provide comprehensive responses to the questions.

1. Clinical Presentation

The patient is a 46-year-old woman with a five-year history of heavy menses. Recently, the patient noted some fatigue and dyspnea on exertion.

A. List all the abnormalities stated in the clinical presentation.
B. Is this more likely an inherited, congenital, acquired, no disorder, or can't tell from the clinical presentation?
C. Discuss the evidence from the clinical presentation that led you to this suspicion.
D. Is this more likely an RBC, WBC, platelet disorder, none of the above, or can't tell from the clinical presentation?
E. Discuss any indicators from the clinical presentation that support your conclusion.

2. Laboratory Data

WBC:	6.2 x 10^9/L	WBC Differential	
RBC:	3.79 x 10^{12}/L	Seg:	62%
Hb:	8.3 g/dL	Mono:	11%
Hct:	27.8%	Lymph:	23%
MCV:	73.3 fL	Eos:	3%
MCH:	21.9 pg	Baso:	1%
MCHC:	29.9 g/dL		
PLT:	415 x 10^9/L	Micro = mod	
		Poiki = mod	
		Tget = few	

A. Are the results acceptable, implying no instrument error?
B. Which three results can best predict that the results are acceptable? Why?
C. List ALL the abnormal results in order of priority.
D. Which cell line is most affected, WBC, RBC, or PLT?
E. Does an anemia exist? If so, slight, moderate or marked?
F. Which three results are the best at determining anemia? Why?
G. If present, classify the anemia using the MCV and MCHC results.
H. List three diseases that fit the classification selected above.

I. List three additional confirmatory lab tests that would assist in making the diagnosis.
J. Predict the results of these three tests for each of the three disorders chosen above (use low, high, normal or variable). (If variable, be specific)
K. List other lab tests that would be beneficial in making the diagnosis.
L. Predict the results of each test for each of the three diseases selected (use low, high normal or variable). (If variable, be specific)

Grading Rubric for PLO #3- Hematology Assignments

Program Learning Outcome (PLO #3): Students will critically evaluate data in the medical sciences.		
Introduce Knowledge/Comprehension	**Reinforce Application/Analysis**	**Master Synthesis/Evaluation**
• Identifies laboratory data that would be appropriate to diagnose a given condition	• Analyze laboratory data for accuracy and applicability to a given clinical condition	• Propose the gathering of additional data to further evaluate a given clinical condition.

Appendix C
PLO #4- Clinical Chemistry Assignments
Fall 2022

Purpose: These assignments are designed to evaluate Program Learning Outcome #4, which focuses on students' ability to apply clinical knowledge to interpret medical science data to develop a differential diagnosis.

4A: Clinical Chemistry Case Study about Glucose Measurement/BLS 1150 Foundations of Medical Sciences

Assignment instructions:

Based on the case presented in lecture and the data given below, solve the patient case by answering the prompt questions thoroughly, using information from the lecture and discussion in class. Your score will be awarded according to the accompanying grading rubric included at the end of this document.

Data & Calculation

SAMPLE		DATA Absorbance (540nm)	CALCULATIONS Show your work	CONCENTRATION mg/dL
#	NAME		$Conc_{unknown} = Conc_{standard} \times \frac{A_{unknown}}{A_{standard}}$	
S	Standard	0.500	___	**100**
N	Control N (75-85 mg/dL)	0.400		
A	Control A (220-260 mg/dL)	1.200		
P_	Patient	0.200		

Interpretation:

1. Would your patient results be reliable enough to use for diagnosis? What criteria do you use to decide and why?
2. Is your patient glucose result normal or abnormal? How do you decide and why?
3. How would your patient glucose level explain his loss of consciousness?
4. What is the clinical status of your patient (normoglycemic, hypoglycemic or hyperglycemic)? How do you decide?
5. What might be the reason for the clinical status addressed in #4?
6. Presuming the glucose result is normal and no salicylate/aspirin is detected, propose an explanation for your patient's loss of consciousness.

This assignment is due on **11/22/22**. A late assignment will result in a score reduction as stated in the syllabus.

4-B: Clinical Chemistry Case Study/BLS 4110 Medical Biochemistry I

Assignment instructions: This assignment is meant to be done individually, not as a team. Please follow the steps below to analyze patient case #6.

STEP 1: Read the case studies and questions carefully.
STEP 2: Examine patient laboratory test results using the reference ranges provided.
STEP 3: Determine the clinical relevance of the abnormal clinical data.
STEP 4: Formulate the answers based on lecture materials.
STEP 5: Make your answers succinct, complete, and organized.
STEP 6: Proofread and edit.

Case 6

Date	2/28/21 10:56	
Sodium	130 mmol/L	L
Potassium	5.7 mmol/L	H
Chloride	94 mmol/L	
Carbon Dioxide	21 mmol/L	L
Anion Gap	15	H
Glucose	98 mg/dL	
Calcium	7.0 mg/dL	L
BUN	67.0 mg/dL	H
Creatinine	3.67 mg/dL	H
Total_Protein	5.7 g/dL	L
Albumin	2.7 g/dL	L
AST	287 U/L	H
ALT	251 U/L	H
ALP	136 U/L	H
Bilirubin	6.7 mg/dL	H
GFR	24	L

	Reference
Sodium	135-145 mmol/L
Potassium	3.7-5.2 mmol/L
Chloride	96-106 mmol/L
CO2	23-29 mmol/L
Anion Gap	3-10
Glucose	70-100 mg/dL
Calcium	8.5-10.2 mg/dL
BUN	6-20 mg/dL
Creatinine	0.6-1.3 mg/dL
T. Protein	6.0-8.3 g/dL
Albumin	3.4-5.4 g/dL
AST	8-33 U/L
ALT	4-36 U/L
ALP	20-130 U/L
Bilirubin	.1-1.2 mg/dl
GFR	>60 mL/min/1.73m^2

Questions: each is worth 2 points unless indicated otherwise

A. Involvement of what 2 organs would best explain the lab abnormalities reflected in the results above?

B. Why is sodium low? (1 point)

C. Why is the potassium high? (1 point)

D. In the context of elevated Anion Gap, explain why the CO_2 (which reflects HCO_3^- level) is low?

E. What is the A/G ratio in this case. What does it indicate and why?

F. What are 2 reasons that might best explain the low calcium level in this case?

G. Consider the low calcium, what another electrolyte should you measure and explain why?

H. How does the significant elevation of both AST and ALT influence your interpretation of the elevation of Alk Phos? (1 point)

I. What is your diagnosis in this case?

Please post your responses in the Canvas Discussion as an attachment by 11:59 pm **Wednesday, December 14, 2022.** The forum will be closed at that time and will not accept late submissions. Make sure to submit it successfully by the due date to avoid receiving a grade of zero.

Grading Rubric for PLO #4-Clinical Chemistry Assignments

Program Learning Outcome (PLO #4): Students will apply clinical knowledge to interpret medical sciences data to develop a differential diagnosis.		
Introduce Knowledge/Comprehension	**Reinforce Application/Analysis**	**Master Synthesis/Evaluation**
• Recognize abnormal clinical data.	• Determine clinical relevance of the abnormal clinical data.	• Diagnose a disease accurately.

Appendix D

Doisy College of Health Sciences Program-Level Assessment Plan

Program: **Investigative and Medical Sciences (IMS)**	Degree Level (e.g., UG or GR certificate, UG major, master's program, doctoral program): **UG**
Department: **Clinical Health Sciences (CHS)**	College/School: **Doisy College of Health Sciences**
Date (Month/Year): **12/07/2017; Revised 10/08/2019; Revised 09/21/2020; Revised 08/15/2021; Revised 09/15/2022**	Primary Assessment Contact: **Minh Kosfeld, PhD, MLT(ASCP)^{CM}**

Note: Each cell in the table below will expand as needed to accommodate your responses.

#	**Student Learning Outcomes** What do the program faculty expect all students to know or be able to do as a result of completing this program? Note: These should be measurable and manageable in number (typically 4-6 are sufficient).	**Curriculum Mapping** In which courses will faculty intentionally work to foster some level of student development toward achievement of the outcome? Please clarify the level (e.g., introduced, developed, reinforced, achieved, etc.) at which student development is expected in each course.	**Program Target**	**Assessment Methods**		**Use of Assessment Data** 1. How and when will analyzed data be used by faculty to make changes in pedagogy, curriculum design, and/or assessment work? 2. How and when will the program evaluate the impact of assessment-informed changes made in previous years?	**Timeline** (any 12-month period is acceptable) Example: *Academic years ending in an odd number*
				Student Artifacts (What) 1. Which student artifacts will be used to determine if students have achieved this outcome? 2. In which courses will these artifacts be collected?	**Evaluation Process (How)** 1. What process will be used to evaluate the student artifacts, and by whom? 2. What tools(s) (e.g., a rubric) will be used in the process? Note: Please include any rubrics as part of the submitted plan documents.		
1	Students will demonstrate the Jesuit value of "Women & Men for and with Others" to promote service in the medical sciences.	**1. BLS 1100** Foundations of Medical Laboratory Science / Introduce **2. BLS 4411** Fundamentals of Immunology / Reinforce	1. An average of 85% of students will achieve the ranking of "introduce" or higher. 2. An average of 85% of	1. A reflection paper describing volunteer service / BLS 1100 Foundations of Medical Laboratory Science 2. A reflection paper describing the	1. Data Collection and Analysis / IMS Program Director Using corresponding assessment rubric. 2. Data Collection/ Course	1. At the end of each assessment cycle, the program faculty members will view the analyzed data with the program director to determine if changes in their	Every academic year that ends with an odd number.

			students will achieve the ranking of "reinforce" or higher.	value of volunteer service / BLS 4411 Fundamentals of Immunology	Instructor Data Analysis/ IMS Program Director Using corresponding assessment rubric.	assessment work are warrant. If so, the faculty members will provide input about the changes to ensure that it is appropriate and meaningful for both the associated courses(s) and the overall program.	
2	Students will deliver a clear description of a medical sciences project.	**1. BLS 1100** Foundation of Medical Laboratory Science / Introduce **2**. **BLS 4610** Research Design, Critique & Presentation / Reinforce	1. An average of 85% of students will achieve the ranking of "introduce" or higher. 2. An average of 85% of students will achieve the ranking of "reinforce" or higher.	1. Student presenting a medical case / BLS 1100 Foundation of Medical Laboratory Science 2. An oral presentation describing a research project / BLS 4610 Research Design, Critique & Presentation	1. Data Collection and Analysis/ IMS Program Director Using corresponding assessment rubric. 2. Data Collection/ Course Instructor Data Analysis/ IMS Program Director Using corresponding assessment rubric.	2. At the end of each assessment cycle, the program director will compare current to earlier student achievement data to determine impact of assessment-informed changes made in previous years.	Every academic year that ends with an even number.
3	Students will critically evaluate data in the medical sciences.	**1**.**BLS 1150** Foundation of Medical Laboratory Science Lab / Introduce **2**. **BLS 4210** Hematology / Reinforce	1. An average of 85% of students will achieve the ranking of "introduce" or higher. 2. An average of 85% of students will achieve the	1. Identifying and counting different types of blood cells / BLS 1150 Foundation of Medical Laboratory Science Lab 2. Evaluating a blood disorder based on blood cell quantity and morphology / BLS 4210 Hematology	1. Data Collection/ Course Instructor Data Analysis/ IMS Program Director Using corresponding assessment rubric. 2. Data Collection/ Course Instructor Data Analysis/ IMS		Every academic year that ends with an odd number.

			ranking of "reinforce" or higher.		Program Director Using correspondin g assessment rubric.		
4	Students will apply clinical knowledge to interpret medical sciences data to develop a differential diagnosis.	1. **BLS 1150** Foundation of Medical Laboratory Science Lab / Introduce 2.**BLS 4110** Medical Biochemistry I / Reinforce	1. An average of 85% of students will achieve the ranking of "introduce " or higher. 2. An average of 85% of students will achieve the ranking of "reinforce" or higher.	1. Measuring glucose concentration / BLS 1150 Foundation of Medical Laboratory Science 2. Solving a case study involving Diabetes mellitus / BLS 4110 Medical Biochemistry I	1. Data Collection/ Course Instructor Data Analysis/ IMS Program Director Using correspondin g assessment rubric. 2. Data Collection and Analysis/ IMS Program Director Using correspondin g assessment rubric.		Every academic year that ends with an odd number.
5	Students will display knowledge of professional and ethical behaviors necessary to work effectively in an interdisciplinar y team.	1.**BLS 1100** Foundation of Medical Laboratory Science / Introduce 2.**BLS 4120** Medical Biochemistry II / Reinforce	1. An average of 85% of students will achieve the ranking of "introduce " or higher. 2. An average of 85% of students will achieve the ranking of "reinforce" or higher.	1.A reflection paper evaluating professional and ethical behaviors throughout the course / BLS 1100 Foundations of Medical Laboratory Science 2. A reflection paper on a case study, examining interdisciplinar y teamwork / BLS 4120 Medical Biochemistry II	1. Data Collection and Analysis/ IMS Program Director Using correspondin g assessment rubric. 2. Data Collection and Analysis/ IMS Program Director Using correspondin g assessment rubric.		Every academic year that ends with an even number.

Additional Questions

1. On what schedule/cycle will faculty assess each of the program's student learning outcomes? (Note: It is <u>not recommended</u> to try to assess every outcome every year.
   Faculty members assess their program's student learning outcomes every two years according to the cycle stated in the Assessment Plan
2. Describe how, and the extent to which, program faculty contributed to the development of this plan.

The instructor for each course evaluated the students' skills using the associated rubrics (see Appendix) and submitted the data to the program director at the end of the term. The program director analyzed these data and drafted an assessment report which was reviewed by the faculty member for accuracy, feedback, and approval.

IMPORTANT: Please remember to submit any rubrics or other assessment tools along with this plan.

Current PLO Assessment Rubric

12/15/2017 original; revised 10/31/2019 based on data analysis for the 2018-2019 report; revised 09/21/2020 based on data analysis for the 2019-2020 report; revised 08/16/2021 based on data analysis for the 2020-2021 report.

Investigative and Medical Sciences (IMS)		
Clinical Health Sciences (CHS)		
Program Learning Outcome (PLO #1): Students will demonstrate Jesuit value of "Women & Men for and with Others" to promote service in the medical sciences.		
Introduce Knowledge/Comprehension	Reinforce Application/Analysis	Master Synthesis/Evaluation
• Interpret the Jesuit value "Men and Women for and with Others."	• Examine the impact of the Jesuit value "Men and Women for and with Others" in their volunteer, shadowing or work experiences.	• Propose an action in the performance of healthcare service activities that demonstrates the Jesuit value "Men and Women for and with Others"
Program Learning Outcome (PLO #2): Students will deliver a clear description of a medical sciences project.		
Introduce Knowledge/Comprehension	Reinforce Application/Analysis	Master Synthesis/Evaluation
• Identify the required elements when presenting a medical science project.	• Articulate a critical analysis of a medical science project	• Defend the analysis of a medical science project proficiently when questioned
Program Learning Outcome (PLO #3): Students will critically evaluate data in the medical sciences.		
Introduce Knowledge/Comprehension	Reinforce Application/Analysis	Master Synthesis/Evaluation
• Identifies laboratory data that would be appropriate to diagnose a given condition	• Analyze laboratory data for accuracy and applicability to a given clinical condition	• Propose the gathering of additional data to further evaluate a given clinical condition.
Program Learning Outcome (PLO #4): Students will apply clinical knowledge to interpret medical sciences data to develop a differential diagnosis.		
Introduce Knowledge/Comprehension	Reinforce Application/Analysis	Master Synthesis/Evaluation
• Recognize abnormal clinical data.	• Determine clinical relevance of the abnormal clinical data.	• Diagnose a disease accurately.
Program Learning Outcome (PLO #5): Students will display knowledge of professional and ethical behaviors necessary to work effectively in an interdisciplinary team.		
Introduce	Reinforce	Master
• Identify personal and interpersonal skills that promote professional collegiality.	• Explain how effective personal and interpersonal skills promote a healthy team climate.	• Propose an action to improve camaraderie and collaboration in interdisciplinary teamwork.

IMPORTANT NOTES: The ratings, identified by the column headings, are of increasing complexity moving across the table (from left to right). Students who can analyze/apply information presented in Medical Sciences (that is, meet the "reinforce" rating) must first have attained the Medical Science knowledge/comprehension rating (the "introduce" rating). Likewise, for students to propose diagnosis or solutions (the "master" rating), they must have knowledge/comprehension of the medical issue (the "introduce" rating) and apply/analyze pertinent information (the "reinforce" rating).

SUMMARY OF CHANGES (as of 09/15/2022).

- Revised PLO #2 to expand subjects.
- Create new assessment tools to better evaluate the revised PLO # 5.

Appendix E

Revised Doisy College of Health Sciences Program-Level Assessment Plan

Program: **Investigative and Medical Sciences (IMS)**	Degree Level (e.g., UG or GR certificate, UG major, master's program, doctoral program): **UG**
Department: **Clinical Health Sciences (CHS)**	College/School: **Doisy College of Health Sciences**
Date (Month/Year): **12/07/2017; Revised 10/08/2019; Revised 09/21/2020; Revised 08/15/2021; Revised 09/15/2022; Revised 10/1/2023**	Primary Assessment Contact: **Minh Kosfeld, PhD, MLT(ASCP)^{CM}**

Note: Each cell in the table below will expand as needed to accommodate your responses.

#	**Student Learning Outcomes** What do the program faculty expect all students to know or be able to do as a result of completing this program? Note: These should be measurable and manageable in number (typically 4-6 are sufficient).	**Curriculum Mapping** In which courses will faculty intentionally work to foster some level of student development toward achievement of the outcome? Please clarify the level (e.g., introduced, developed, reinforced, achieved, etc.) at which student development is expected in each course.	**Program Target**	**Assessment Methods** **Student Artifacts (What)** 3. Which student artifacts will be used to determine if students have achieved this outcome? 4. In which courses will these artifacts be collected?	**Assessment Methods** **Evaluation Process (How)** 3. What process will be used to evaluate the student artifacts, and by whom? 4. What tools(s) (e.g., a rubric) will be used in the process? Note: Please include any rubrics as part of the submitted plan documents.	**Use of Assessment Data** 3. How and when will analyzed data be used by faculty to make changes in pedagogy, curriculum design, and/or assessment work? 4. How and when will the program evaluate the impact of assessment-informed changes made in previous years?	**Timeline** (any 12-month period is acceptable) Example: *Academic years ending in an odd number*
1	Students will demonstrate the Jesuit value of "Women & Men for and with Others" to promote service in the medical sciences.	**1. BLS 1100** Foundations of Medical Laboratory Science / Introduce **2. BLS 4411** Fundamentals of Immunology / Reinforce	1. An average of 85% of students will achieve the ranking of "introduce" or higher. 2. An average of 85% of students	1. A reflection paper describing the value of volunteer service / BLS 1100 Foundations of Medical Laboratory Science 2. A reflection paper	1. Data Collection and Analysis / IMS Program Director Using corresponding assessment rubric. 2. Data Collection/ Course Instructor	1. At the end of each assessment cycle, the program faculty members will view the analyzed data with the program director to determine if changes in their assessment	Every academic year that ends with an odd number.

			will achieve the ranking of "reinforce" or higher.	describing the value of volunteer service / BLS 4411 Fundamentals of Immunology	Data Analysis/ IMS Program Director Using corresponding assessment rubric.	work are warrant. If so, the faculty members will provide input about the changes to ensure that it is appropriate and meaningful for both the associated courses(s) and the overall program.	
2	Students will articulate a clear description of a medical sciences project.	**1. BLS 1100** Foundation of Medical Laboratory Science / Introduce **2**. **BLS 4610** Research Design, Critique & Presentation / Reinforce	1. An average of 85% of students will achieve the ranking of "introduce" or higher. 2. An average of 85% of students will achieve the ranking of "reinforce" or higher.	1. Student presenting a medical case / BLS 1100 Foundation of Medical Laboratory Science 2. An oral presentation describing a research project / BLS 4610 Research Design, Critique & Presentation	1. Data Collection and Analysis/ IMS Program Director Using corresponding assessment rubric. 2. Data Collection/ Course Instructor Data Analysis/ IMS Program Director Using corresponding assessment rubric.	2. At the end of each assessment cycle, the program director will compare current to earlier student achievement data to determine impact of assessment-informed changes made in previous years.	Every academic year that ends with an even number.
3	Students will apply clinical knowledge to interpret medical sciences data to develop a differential diagnosis.	**1**.**BLS 1150** Foundation of Medical Laboratory Science Lab / Introduce **2**. **BLS 4210** Hematology / Reinforce	1. An average of 85% of students will achieve the ranking of "introduce" or higher. 2. An average of 85% of students will achieve the ranking of "reinforce" or higher.	1. Solving a case study involving Diabetes mellitus / BLS 4110 Medical Biochemistry I 2. Evaluating a blood disorder based on blood cell quantity and morphology / BLS 4210 Hematology	1. Data Collection/ Course Instructor Data Analysis/ IMS Program Director Using corresponding assessment rubric. 2. Data Collection/ Course Instructor Data Analysis/ IMS Program Director		Every academic year that ends with an odd number.

					Using corresponding assessment rubric.		
4	Students will display knowledge of professional and ethical behaviors necessary to work effectively in a team.	**1.BLS 1100** Foundation of Medical Laboratory Science / Introduce **2.BLS 4120** Medical Biochemistry II / Reinforce	1. An average of 85% of students will achieve the ranking of "introduce" or higher. 2. An average of 85% of students will achieve the ranking of "reinforce" or higher.	1.A reflection paper evaluating professional and ethical behaviors throughout the course / BLS 1100 Foundations of Medical Laboratory Science 2. A reflection paper on a case study examining interdisciplinary teamwork / BLS 4120 Medical Biochemistry II	1. Data Collection and Analysis/ IMS Program Director Using corresponding assessment rubric. 2. Data Collection and Analysis/ IMS Program Director Using corresponding assessment rubric.		Every academic year that ends with an even number.

Additional Questions

3. On what schedule/cycle will faculty assess each of the program's student learning outcomes? (Note: It is not recommended to try to assess every outcome every year.
   Faculty members assess their program's student learning outcomes every two years according to the cycle stated in the Assessment Plan
4. Describe how, and the extent to which, program faculty contributed to the development of this plan.
   The instructor for each course evaluated the students' skills using the associated rubrics (see Appendix) and submitted the data to the program director at the end of the term. The program director analyzed these data and drafted an assessment report which was reviewed by the faculty member for accuracy, feedback, and approval.

IMPORTANT: Please remember to submit any rubrics or other assessment tools along with this plan.

Revised Assessment Rubric

12/15/2017 original; revised 10/31/2019 based on data analysis for the 2018-2019 report; revised 09/21/2020 based on data analysis for the 2019-2020 report; revised 08/16/2021; Revised 10/1/2023 based on data analysis for the 2022-2023 report.

Investigative and Medical Sciences (IMS)		
Clinical Health Sciences (CHS)		
Program Learning Outcome (PLO #1): Students will demonstrate Jesuit value of "Women & Men for and with Others" to promote service in the medical sciences.		
Introduce Knowledge/Comprehension	Reinforce Application/Analysis	Master Synthesis/Evaluation
• Interpret the Jesuit value "Men and Women for and with Others."	• Examine the impact of the Jesuit value "Men and Women for and with Others" in their volunteer, shadowing, or work experiences.	• Propose an action in the performance of healthcare service activities that demonstrates the Jesuit value "Men and Women for and with Others"
Program Learning Outcome (PLO #2): Students will articulate a clear description of a medical sciences project.		
Introduce Knowledge/Comprehension	Reinforce Application/Analysis	Master Synthesis/Evaluation
• Identify the required elements when presenting a medical science project.	• Articulate a critical analysis of a medical science project	• Defend the analysis of a medical science project proficiently when questioned
Program Learning Outcome (PLO #3): Students will apply clinical knowledge to interpret medical sciences data to develop a differential diagnosis.		
Introduce Knowledge/Comprehension	Reinforce Application/Analysis	Master Synthesis/Evaluation
• Determine clinical relevance of the abnormal clinical data.	• Diagnose a disease accurately.	• Propose the gathering of additional data to further evaluate a given clinical condition.
Program Learning Outcome (PLO #4): Students will display knowledge of professional and ethical behaviors necessary to work effectively in an interdisciplinary team.		
Introduce	Reinforce	Master
• Identify personal and interpersonal skills that promote professional collegiality.	• Explain how effective personal and interpersonal skills promote a healthy team climate.	• Propose an action to improve camaraderie and collaboration in interdisciplinary teamwork.

IMPORTANT NOTES: The ratings, identified by the column headings, are of increasing complexity moving across the table (from left to right). Students who can analyze/apply information presented in Medical Sciences (that is, meet the "reinforce" rating) must first have attained the Medical Science knowledge/comprehension rating (the "introduce" rating). Likewise, for students to propose diagnosis or solutions (the "master" rating), they must have knowledge/comprehension of the medical issue (the "introduce" rating) and apply/analyze pertinent information (the "reinforce" rating).

SUMMARY OF CHANGES (as of 10/1/2023).

- Combine PLO3 and 4 to expand subjects.
- Create new rubric criteria to evaluate the revised PLO #3.