Undergraduate Academic Program
Assessment Plan Example

Bachelor of Science in Human-Centered Automation Design

*This fictional assessment plan illustrates a strong assessment plan rated **Good** overall using the SHSU Meta-Assessment Rubric. Some components meet the Exemplary standard, while others intentionally reflect the Good level. The example demonstrates that a Good plan is clear, complete, aligned, and useful for continuous improvement, while also showing the additional evidence, justification, and implementation detail needed to reach Exemplary.*

NOTE: A high-quality assessment plan for an academic program should be grounded in the program's Mission.

Program Mission

The Bachelor of Science in Human-Centered Automation Design prepares graduates to design, evaluate, and improve innovative automated systems that effectively integrate human needs, decision-making, ethics, and technology. Through an interdisciplinary curriculum, students learn to create automation solutions that enhance human performance while maintaining safety, accessibility, transparency, and societal responsibility. Graduates are prepared to improve human experiences, support ethical decision-making, and address complex societal challenges through human-centered design and interdisciplinary problem solving.

Goal 1
Prepare graduates to address complex challenges through human-centered automation solutions.

Learning Objective 1.1
By the end of the program, students will design automation systems that incorporate four human factors principles drawn from relevant professional and industry standards: usability, accessibility, transparency, and safety and reliability.

Indicator 1.1 (Direct Measurement Method)
Senior Capstone Automation System Design Project: Students will complete a comprehensive automation system design project during the senior capstone course.

Faculty will evaluate each project using a standardized Human-Centered Automation Design Rubric that assesses students' ability to incorporate the program's four human factors principles identified in program industry standards: usability, accessibility, transparency, and safety and reliability. Each principle will be evaluated using a four-point performance scale, and an overall rubric score will be calculated for each student.

Criterion 1.1
At least 80% of students will earn an overall score of 3.0 or higher on the Human-Centered Automation Design Rubric (4-point scale) for the Senior Capstone Automation System Design Project.

An overall rubric score of 3.0 represents proficient performance and indicates that students can effectively incorporate the program's four human factors principles into an automation system design. The 80% benchmark reflects the program's expectation that the majority of graduating students will demonstrate proficiency by the completion of the curriculum while recognizing that a small percentage of students may require additional development.

Criterion Status
Met

Findings 1.1
The criterion was met. During the 2027–2028 assessment cycle, 58 graduating seniors completed the Senior Capstone Automation System Design Project. Faculty evaluated each project using the Human-Centered Automation Design Rubric. Overall, 48 of 58 students (82.8%) earned an overall rubric score of 3.0 or higher, exceeding the program's benchmark of 80%.

Students demonstrated the strongest performance in incorporating usability and accessibility principles into their designs. Performance was somewhat lower for the transparency and safety and reliability principles, where several students had difficulty fully explaining automated decision-making processes and identifying safeguards for system failures. Although the criterion was met, these results indicate opportunities to further strengthen student understanding of transparency and system reliability within the curriculum.

Action 1.1
Faculty will revise the senior capstone course to strengthen instruction on the transparency, safety, and reliability of human factors principles. Specifically, faculty will incorporate one additional design case study focused on explainable automation and one in-class design exercise requiring students to identify potential system failures and recommend appropriate safeguards. These instructional enhancements will be implemented before the start of the 2028–2029 academic year.

The Program Coordinator will oversee implementation in collaboration with faculty teaching the senior capstone course, and student performance on the Human-Centered Automation Design Rubric will be reassessed during the next assessment cycle to determine the effectiveness of these changes.

Learning Objective 1.2
By the end of the program, students will evaluate automation systems using evidence-based criteria.

Indicator 1.2 (Direct Measurement Method)
Automation System Evaluation Case Study: Students will complete an individual case study in which they evaluate an existing automated system used in an industry or public-sector setting. Students will assess the system's effectiveness, identify strengths and limitations, evaluate potential risks, and develop evidence-supported recommendations for improvement.

Faculty will evaluate each case study using a standardized competency-based scoring guide that identifies four required competencies: Evidence-Based Analysis, Evaluation of Risks and Limitations, Recommendations, and Use of Supporting Evidence. For each competency, faculty will determine whether the student demonstrates proficiency based on established performance requirements.

Criterion 1.2
At least 85% of students will demonstrate proficiency on three of the four competencies assessed through the Automation System Evaluation Case Study: Evidence-Based Analysis, Evaluation of Risks and Limitations, Recommendations, and Use of Supporting Evidence.

Evaluating automation systems requires proficiency across multiple competencies rather than strong performance in only one area. Requiring students to demonstrate proficiency on three of the four competencies ensures that graduates can consistently apply evidence-based evaluation skills while recognizing that proficiency may continue to develop in one area.

Criterion Status
Not Met

Findings 1.2
The criterion was not met. Overall, 47 of 60 students (78.3%) demonstrated proficiency on at least three of the four competencies, falling short of the program's benchmark of 85%. During the 2027–2028 assessment cycle, 60 graduating seniors completed the Automation System

Evaluation Case Study. Faculty evaluated student performance on four competencies: Evidence-Based Analysis, Evaluation of Risks and Limitations, Recommendations, and Use of Supporting Evidence.

Students performed strongest in Evaluation of Risks and Limitations and Use of Supporting Evidence but demonstrated weaker performance in Evidence-Based Analysis and Recommendations. Several students identified system strengths and limitations but did not consistently synthesize evidence to support their conclusions or develop specific, feasible recommendations. These results indicate a need for additional instruction and practice in evidence synthesis and recommendation development.

Action 1.2
Faculty will enhance instruction on evidence-based evaluation by incorporating additional guided case analyses into the course that precedes the senior capstone experience. The revised instruction will emphasize synthesizing multiple sources of evidence, developing well-supported conclusions, and formulating specific, feasible recommendations for improving automation systems. Faculty will also revise the Automation System Evaluation Case Study assignment to include a structured evaluation framework that guides students through the evidence analysis and recommendation development process.

The Program Coordinator, in collaboration with faculty teaching the course, will implement these revisions before the start of the 2028–2029 academic year. Student performance on the Evidence-Based Analysis and Recommendations competencies will be reviewed during the next assessment cycle to determine whether the instructional changes improve student proficiency.

Goal 2
Develop graduates who can apply ethical and socially responsible decision-making principles when designing, implementing, and evaluating automation systems.

Learning Objective 2.1
By the end of the program, students will analyze the ethical implications of automation systems using established ethical frameworks.

Indicator 2.1 (Direct Measurement Method)
Ethical Position Paper: Students will prepare an individual ethical position paper in which they analyze a contemporary ethical issue involving an automation system. The paper will require students to apply one or more established ethical frameworks to examine competing stakeholder perspectives, evaluate ethical tradeoffs, and defend a recommended course of action using evidence and logical reasoning.

Faculty will evaluate each paper using a standardized Ethical Analysis Rubric that assesses students' application of ethical frameworks, quality of ethical reasoning, use of supporting evidence, consideration of stakeholder perspectives, and justification of conclusions.

Criterion 2.1
At least 80% of students will earn a rating of Proficient (3) or higher on the Application of Ethical Frameworks, Ethical Reasoning, and Justification of Conclusions dimensions of the Ethical Analysis Rubric for the Ethical Position Paper.

These three rubric dimensions represent the core competencies of ethical analysis within the program. Students must demonstrate the ability to apply established ethical frameworks, analyze complex ethical issues using logical reasoning, and defend their conclusions with well-supported arguments. The 80% benchmark reflects the program's expectation that the majority of graduating students will demonstrate proficiency in these essential competencies before entering professional practice.

Criterion Status
Met

Findings 2.1
The criterion was met. During the 2027–2028 assessment cycle, 61 graduating seniors completed the Ethical Position Paper. Faculty evaluated each paper using the Ethical Analysis Rubric. Overall, 50 of 61 students (82.0%) earned a rating of Proficient (3) or higher on the Application of Ethical Frameworks, Ethical Reasoning, and Justification of Conclusions rubric dimensions, exceeding the program's benchmark of 80%.

Students demonstrated a strong ability to identify ethical issues and apply established ethical frameworks to analyze complex automation scenarios. Most students effectively recognized competing stakeholder interests and supported their conclusions with logical reasoning and relevant evidence. While the majority met the program's expectations, several students struggled to consider alternative ethical perspectives and address potential long-term societal consequences when defending their recommendations. These results indicate that students are developing sound ethical reasoning skills and highlight opportunities to further strengthen their analysis of complex ethical trade-offs.

Action 2.1
Faculty will enhance the Ethical Position Paper assignment by incorporating a structured peer review activity that requires students to evaluate alternative ethical perspectives and provide constructive feedback on one another's analyses before submitting the final paper. In addition, faculty will develop a classroom discussion centered on emerging ethical challenges in automation to encourage students to consider long-term societal consequences and competing stakeholder viewpoints when formulating recommendations.

The Program Coordinator, in collaboration with faculty teaching the course, will implement these enhancements during the 2028–2029 academic year. Student performance on the Application of Ethical Frameworks, Ethical Reasoning, and Justification of Conclusions rubric dimensions will be reviewed during the next assessment cycle to determine whether these instructional enhancements improve students' ability to analyze complex ethical tradeoffs and defend well-reasoned conclusions.

Learning Objective 2.2
By the end of the program, students will evaluate the societal impacts of automation systems.

Indicator 2.2 (Direct Measurement Method)
Societal Impact Assessment Report: Students will prepare an individual Societal Impact Assessment Report evaluating the potential societal impacts of a proposed or existing automation system. The report will examine workforce implications, accessibility, privacy, equity, public safety, environmental sustainability, and community well-being, and conclude with evidence-based recommendations for mitigating adverse impacts.

Faculty will evaluate each report using a standardized Societal Impact Assessment Rubric that assesses students' ability to analyze societal impacts, evaluate evidence, consider diverse stakeholder perspectives, assess potential benefits and risks, and develop well-supported recommendations.

Criterion 2.2
At least 80% of students will earn a rating of Proficient (3) or higher on five of the six required sections of the Societal Impact Assessment Rubric: (1) Analysis of Societal Impacts, (2) Evaluation of Supporting Evidence, (3) Stakeholder Analysis, (4) Assessment of Benefits and Risks, (5) Recommendations for Mitigating Adverse Impacts, and (6) Overall Organization and Communication.

Evaluating the societal impacts of automation systems requires students to demonstrate competency across multiple aspects of professional impact assessment. Requiring proficiency in five of the six rubric sections ensures that students can conduct a comprehensive analysis while recognizing that graduating students may continue to refine one aspect of professional reporting as they transition into the workforce.

Criterion Status
Not Met

Findings 2.2
The criterion was not met. During the 2027–2028 assessment cycle, 59 graduating seniors completed the Societal Impact Assessment Report. Overall, 44 of 59 students (74.6%) earned a rating of Proficient (3) or higher on at least five of the six rubric sections, falling short of the program's benchmark of 80%.

Students performed strongest in Analysis of Societal Impacts and Assessment of Benefits and Risks but demonstrated weaker performance in Stakeholder Analysis and Recommendations for Mitigating Adverse Impacts. Several students identified affected stakeholder groups but did not fully evaluate how impacts differed among those groups or account for competing stakeholder interests. In addition, some recommendations were too broad or were not sufficiently supported by evidence or connected to identified risks. These findings indicate that students can identify and evaluate societal impacts but need additional instruction and practice in stakeholder analysis and the development of specific, evidence-based mitigation strategies.

Action 2.2
Faculty will revise course activities to strengthen students' ability to conduct comprehensive stakeholder analyses and develop evidence-based strategies for mitigating the societal impacts of automation systems. Prior to completing the Societal Impact Assessment Report, students will complete a scaffolded stakeholder analysis exercise that requires them to identify affected stakeholder groups, evaluate the differential impacts of automation on those groups, and consider competing societal interests. Faculty will also incorporate an instructional workshop on developing practical, evidence-based mitigation strategies using real-world examples from industry and public-sector automation initiatives.

The Program Coordinator, in collaboration with faculty teaching the course, will implement these instructional enhancements before the start of the 2028–2029 academic year. Student performance on the Stakeholder Analysis and Recommendations for Mitigating Adverse Impacts sections of the Societal Impact Assessment Rubric will be reviewed during the next assessment cycle to determine whether the revisions improve students' ability to produce comprehensive societal impact assessments.

Goal 3
Develop graduates who can communicate and collaborate effectively in interdisciplinary professional environments.

Learning Objective 3.1
By the end of the program, students will apply interdisciplinary collaboration skills in team-based projects.

Indicator 3.1 (Direct Measurement Method)
Interdisciplinary Team-Based Project: Students will participate in an interdisciplinary team-based project in which they collaborate with classmates representing different disciplinary roles to develop a proposed automation solution for a real-world problem.

At designated points during the project, faculty will use a standardized observation checklist to document each student’s demonstration of five collaboration competencies: Individual Contribution, Communication Within the Team, Integration of Interdisciplinary Perspectives, Collaborative Problem-Solving, and Professional Teamwork Behaviors. For each competency, faculty will determine whether the student demonstrates proficiency based on established observable behaviors.

Criterion 3.1
At least 85% of students will demonstrate proficiency on four of the five collaboration competencies documented through the standardized faculty observation checklist: (1) Individual Contribution, (2) Communication Within the Team, (3) Integration of Interdisciplinary Perspectives, (4) Collaborative Problem-Solving, and (5) Professional Teamwork Behaviors.

Effective interdisciplinary collaboration requires students to demonstrate professional teamwork behaviors across multiple competencies rather than strength in only one area. Requiring

proficiency on four of the five competencies reflects the program's expectation that graduating students will be prepared to contribute effectively in interdisciplinary professional environments while recognizing that continued growth may occur as they gain workplace experience.

Criterion Status
Met

Findings 3.1
The criterion was met. During the 2027–2028 assessment cycle, 60 graduating seniors participated in the Interdisciplinary Team-Based Project. Faculty used the standardized observation checklist at designated points during the project to document students' demonstration of the five collaboration competencies. Overall, 53 of 60 students (88.3%) demonstrated proficiency on at least four of the five competencies, exceeding the program's benchmark of 85%.

Students demonstrated strong performance in Individual Contribution, Communication Within the Team, Collaborative Problem-Solving, and Professional Teamwork Behaviors. Performance was somewhat lower in Integration of Interdisciplinary Perspectives. Some students collaborated effectively but did not consistently demonstrate how perspectives from multiple disciplines informed team decisions. These results indicate that students demonstrate effective interdisciplinary collaboration overall but would benefit from additional practice intentionally integrating diverse disciplinary perspectives into collaborative problem-solving.

Action 3.1
Although the criterion was met, faculty will strengthen students' ability to integrate interdisciplinary perspectives by incorporating a structured interdisciplinary design review into the Interdisciplinary Team-Based Project. During the review, student teams will document how perspectives from multiple disciplines informed key design decisions and explain how differing viewpoints were considered and incorporated into the proposed solution. Faculty will provide a design review template to guide this process and provide formative feedback before students complete the final project.

The Program Coordinator, in collaboration with faculty teaching the course, will implement the design review before the start of the 2028–2029 academic year. Student performance on the Integration of Interdisciplinary Perspectives competency, as documented through the standardized faculty observation checklist, will be reviewed during the next assessment cycle to determine whether the additional design review improves students' ability to intentionally integrate diverse disciplinary perspectives into collaborative problem-solving.

Learning Objective 3.2
By the end of the program, students will communicate technical information to technical and non-technical audiences.

Indicator 3.2 (Direct Measurement Method)
Client Briefing Presentation: Students will prepare and deliver a professional client briefing on an automation system or project to both a technical and a non-technical audience. The presentation will require students to accurately communicate technical concepts, organize information logically, adapt explanations to meet the needs of each audience, incorporate appropriate visual aids, and respond effectively to audience questions.

Faculty will evaluate each presentation using a standardized Technical Communication Rubric that assesses students' organization and clarity, technical accuracy, audience adaptation, effective use of presentation materials, delivery skills, and responses to audience questions.

Criterion 3.2
At least 85% of students will earn a rating of Proficient (3) or higher on four of the five core communication competencies of the Technical Communication Rubric: (1) Technical Accuracy, (2) Organization and Clarity, (3) Audience Adaptation, (4) Delivery Skills, and (5) Responses to Audience Questions.

Effective professional communication requires more than accurate technical knowledge. Graduates must be able to organize information clearly, tailor technical content to audiences with varying levels of expertise, deliver information confidently, and respond appropriately to questions. Requiring proficiency on four of the five core communication competencies reflects the program's expectation that graduating students can communicate technical information effectively in interdisciplinary professional settings while recognizing that continued growth in one competency may occur through professional experience.

Criterion Status
Met

Findings 3.2
The criterion was met. During the 2027–2028 assessment cycle, 62 graduating seniors completed the Client Briefing Presentation. Overall, 55 of 62 students (88.7%) earned a rating of Proficient (3) or higher on four of the five core communication competencies, exceeding the program's benchmark of 85%.

Students performed strongest in Technical Accuracy and in Organization and Clarity and generally communicated effectively with both technical and non-technical audiences. However, some students had difficulty simplifying complex technical concepts for non-technical audiences without relying on discipline-specific terminology or assuming prior technical knowledge. These results indicate that students communicate technical information effectively overall but would benefit from additional practice adapting complex information for non-technical audiences.

Action 3.2
Faculty will strengthen students' ability to communicate technical information to non-technical audiences by incorporating an audience adaptation exercise prior to the Client Briefing Presentation. Students will develop and present a brief explanation of a complex automation concept for a non-technical audience, receive formative feedback from faculty and peers, and

revise their communication approach before completing the summative presentation. Faculty will also incorporate additional examples of effective technical communication strategies that demonstrate how to simplify complex concepts without sacrificing technical accuracy.

The Program Coordinator, in collaboration with faculty teaching the course, will implement these instructional enhancements before the start of the 2028–2029 academic year. Student performance on the Audience Adaptation and Organization and Clarity dimensions of the Technical Communication Rubric will be reviewed during the next assessment cycle to determine whether these enhancements improve students' ability to communicate effectively with audiences possessing different levels of technical expertise.

Previous Cycle's Plan for Continuous Improvement (Do Not Modify)
During the 2026–2027 assessment cycle, the program identified a need to strengthen students' ability to integrate human-centered design principles into the development of automation systems. During the 2027–2028 academic year, faculty will revise assignments in the junior-level design course to incorporate two structured human-centered design review sessions before completion of the final project. Students will receive formative feedback during these reviews on their application of the principles of usability, accessibility, transparency, and safety and reliability.

Faculty will also revise instructional materials to include additional examples that demonstrate the effective integration of these human-centered design principles. The program will review subsequent assessment results to determine whether these changes improve students' ability to incorporate human-centered design principles into automation system development.

Update to the Previous Cycle's Plan for Continuous Improvement
During the 2026–2027 assessment cycle, the program identified the need to strengthen students' ability to integrate human-centered design principles into automation system development. The previous Plan for Continuous Improvement called for incorporating structured design review sessions, formative feedback, and additional instructional examples within the junior-level design course.

The planned improvements were fully implemented during the 2027–2028 academic year. Faculty incorporated two structured design review sessions into the course and provided students with formative feedback on the application of human-centered design principles before completion of the final project. Faculty also revised instructional materials to include additional examples illustrating effective integration of usability, accessibility, transparency, and safety considerations during the design process.

Assessment results from the current cycle indicate improvement in students' application of human-centered design principles, with the corresponding learning objective exceeding the established performance criterion. Based on these results, the program determined that the previous improvement strategy was effective and will continue incorporating these instructional practices while pursuing additional enhancements identified through the current assessment cycle.

New Plan for Continuous Improvement
Based on the results of the 2027–2028 assessment cycle, the Human-Centered Automation Design program will implement a coordinated set of instructional improvements designed to strengthen student performance across the curriculum while reinforcing areas of demonstrated success.

Faculty will revise the senior capstone experience by incorporating additional instructional activities focused on explainable automation, system safety, and reliability. Guided case analyses and structured evaluation frameworks will be integrated into upper-division coursework to improve students' ability to synthesize evidence and develop well-supported recommendations when evaluating automation systems.

To further strengthen ethical reasoning and societal impact analysis, faculty will incorporate additional peer-review opportunities, classroom discussions addressing emerging ethical issues, stakeholder analysis exercises, and workshops focused on developing evidence-based mitigation strategies. These enhancements are intended to improve students' ability to evaluate the broader societal implications of automation technologies while considering multiple stakeholder perspectives.

To enhance professional collaboration and communication skills, faculty will implement interdisciplinary design review sessions, require student teams to explicitly document how multiple disciplinary perspectives influenced project decisions, and introduce an audience adaptation exercise prior to the Client Briefing Presentation. Additional instructional examples and formative feedback will help students more effectively communicate complex technical concepts to audiences with varying levels of technical expertise.

In addition to these instructional improvements, the program will review selected course sequencing and instructional resources to ensure students have sufficient opportunities to practice these competencies before completing their senior-level assessments. Faculty will meet at the conclusion of the 2028–2029 assessment cycle to evaluate the effectiveness of these initiatives, review assessment results, and determine whether further curricular or instructional modifications are warranted to support continuous improvement.