2021 Academic Program Assessment Report		**Program current assessment plan here:**	https://www.csupueblo.edu/assessment-and-student-learning/_doc/results-and-reports/2013/plans/MSE-Assessment-Plan-March-23-2013.pdf
Engineering MSE		**Program prior assessment report here:**	https://www.csupueblo.edu/assessment-and-student-learning/_doc/2020/report/ms-mechatronics-assessment-report-2020.pdf

Report Completed By:	**Nebojsa Jaksic**
Date Report Completed:	**June 1, 2021**
Faculty members involved in this Assessment:	**Bahaa Ansaf, Leonardo Bedoya-Valencia, and Trung Duong**

Please describe this year's assessment activities and follow-up for your program below. (Separate sheet for each undergraduate major, stand-alone minor, certificate, and graduate program in your department.) Please also submit any addenda such as rubrics which are not available in your assessment plan. The reports will be available to the Dean of your college/school and to the Executive Director for Assessment as well as faculty peer reviewers.

Brief Statement of Program Mission and Goals:	The MSME program prepares students from diverse educational backgrounds to function as engineers in advanced projects in mechatronics engineering and/or to continue their studies and obtain other advanced degrees especially at the doctoral level. Mechatronics combines mechanical, electrical, computer, and controls engineering with computer science to create intelligent machines.

I. Assessment of Student Learning Outcomes (SLOs) in this cycle. Including processes, results, and recommendations for improved student learning. Use Column H to describe improvements planned for the year based on the assessment process.

A. Your program SLOs are pasted here verbatim from your assessment plan. Please enter info in columns B-H only for those assessed during this annual cycle.	B. When was this SLO last reported on prior to this cycle? (semester and year)	C. What method was used for assessing the SLO? Please include a copy of any rubrics used in the assessment process.	D. Who was assessed? Please fully describe the student group(s) and the number of students or artifacts involved (N).	E. What is the expected proficiency level and how many or what proportion of students should be at that level?	F. What were the results of the assessment? (Include the proportion of students meeting proficiency.)	G. What were the department's conclusions about student performance?	H. What changes/improvements to the program are planned based on this assessment?
Apply advanced engineering principles in the design and analysis of a system or process to meet specified needs	Spring 2020	Methods: EN 561 Final and/or Homework, EN 513 Homework/Mini-Projects, and Final Project Rubrics: Design Strategy and Constraints	In EN 561 there were four students enrolled in Fall 2020. In EN 513, in Spring 2021 there were two MSME students and three students enrolled in the 3+2 program.	At least 80% of the students should meet or exceed expectations	All students in EN 561 were able to apply correct state-space design strategy under given constraints. They were able to demonstrate their knowledge when solving complicated problems. All students in EN513 were capaple of applying appropriate modern AI/ML methods, tools and technologies to solve engineering problems, analyze data, and interpret restults.	All MSME students (100%) in EN 561 and EN 513 performed well. However, no firm conclusions could be reached due to the small sample size.	For EN513, a synchronized online teaching method was used for Spring 21, and it was successful. We can continue offering this class using remote learning pedagogy and techniques.
Communicate effectively in writing and orally	Fall 2019 for EN 593 and Spring 2020 for the rest	Methods: EN 593: Reports and presentations EN 507: Project report evaluation EN 563: Review paper evaluation Rubrics: Written: Articulation, organization, neatness, grammar and spelling, writing style, document formatting, and proper referencing of the sources. Oral: Delivery, length and detail, mechanics, dialect, visual aides, appearance, and listening and response to questions	Two (2) MSE and Two (2) MSISE graduate student who were enrolled in EN 593 during the Fall 2020. Three MSME graduate and 3+2 students who were enrolled in EN 507 (Fall 2020) Three MSME graduate and 3+2 students who were enrolled in EN 563 (Spring 2021)	At least 80% of the students should meet or exceed expectations	The students in EN 593 wrote literature reviews and did presentations each on a potential topic for his\her master thesis or research project. All students (100%) exceeded the expectation for this SLO. The students in EN 507 wrote a project report. All students (100%) exceeded the expectation for this SLO. The students in EN 563 wrote a review paper on a robotics topic. However, only 67% of students met the expectation for this SLO.	MSME students in two out of three courses met or exceeded expectations for this SLO, so it can be concluded that overall the expectations for this SLO were met. In EN 593, instead of course specific student surveys, feedback through the grading method was given to the students. Two (2) of the students went on successfully presenting their MSISE thesis based on their work on EN 593.	In EN 563, students did not meet the expectations for this SLO. Thus, in addition to a review paper, a short project report will be required to strengthen this SLO. A set of instructions on writing review papers will be distributed to the students. For EN 593, the instructor will keep on encouraging students to work and use proper referencing in their academics reports including research papers and thesis. Additionally, students will be encouraged to keep using the Writing Center for editing their work.

Analyze and/or design a mechatronics system	Spring 2020	Methods: EN 563 Final Course Exam and/or Project Reports Rubrics: Design Strategy, Solutions, and Tools	Three MSME graduate and 3+2 students who were enrolled in Spring 2021	At least 80% of the students should meet or exceed expectations	All students (100%) were able to analyze and/or design a mechatronic system. Students' designs demonstrated correct design strategies (Final), solutions (Final), and the use of computer tools like RobotStudio (Project). An exit interview was not administered since no student was graduating	This time the department did not discuss the student performance.	The remote delivery mode based on Community of Inquiry was planned and implemented. This can become a permanent change if EN 563 is to be offered remotely.

Comments on part I:	Our recruitment efforts decreased due to COVID-19. We were able to recruit locally from the existing undergraduate student population as well as from Africa and Asia. The pandemic forced us into remote teaching, but was also an opportunity to learn some online methods and implement them in our teaching environment.

II. Closing the Loop. Describe at least one data-informed change to your curriculum during the year cycle. These are those that were based on, or implemented to address, the results of assessment from previous cycles.

A. What SLO(s) or other issues did you address in this cycle? Please include SLOs verbatim from the assessment plan, as above.	B. When was this SLO last assessed to generate the data which informed the change? Please indicate the semester and year.	C. What were the recommendations for change from the previous assessment column H and/or feedback?	D. How were the recommendations for change acted upon?	E. What were the results of the changes? If the changes were not effective, what are the next steps or the new recommendations?

Comments on part II:	While there were many changes implemented due to the COVID-19 pandemic, they were neither anticipated nor planned.

MSME Assessment Rubrics

Analyze and/or design a mechatronic system

	Exceeds expectations 5%	Meets expectations 75%	Does not meet expectations 20%
Design Strategy	Develops a design strategy, including a plan; decomposes work into subtasks, and develops a timetable.	Uses a design strategy with guidance.	No design strategy is attempted.
Solutions	Develops several potential designs and based on the analysis of those designs finds an optimal design solution using the system view approach.	Can develop and compare multiple solutions to a mechatronic design problem, but does not usually arrive at the best result; conducts optimization but neglects one or two key aspects. Does not use the system view approach.	Cannot design a mechatronic system or individual component without a significant amount of help. Only focuses on one solution to a problem; no optimization attempted.
Tools	Uses computer tools and engineering resources effectively to analyze and/or design mechatronic systems.	There is evidence of mostly correct use of computer tools and engineering resources.	There is no evidence of use of computer tools and engineering resources.

Apply advanced engineering principles in the design and analysis of a mechatronic system or process to meet specified needs

	Exceeds expectations 5%	Meets expectations 75%	Does not meet expectations 20%
Design Strategy	Develops a design strategy, including a plan; decomposes work into subtasks, and develops a timetable.	Uses a design strategy with guidance.	No design strategy is attempted.
Constraints	Develops a solution that includes all realistic constraints.	Develops a solution that fails to include one or more minor realistic constraints.	There is no consideration of realistic constraints.

Communicate effectively in oral form

	Exceeds expectations 5%	Meets expectations 75%	Does not meet expectations 20%
Delivery	Plans and delivers an oral presentation effectively; applies the principle of "tell them."	Presents key elements of an oral presentation adequately, but does not apply "tell them" clearly.	Organizes the presentation poorly (e.g. no clear introduction or summary is delivered).
Length and Detail	Presents technical content appropriate for the time allowed and the audience level.	Presents excessive or insufficient detail for time allowed and/or the audience level.	Presents for an inappropriately short or long time period; omits key results during the presentation.
Mechanics	Makes eye contact; can be easily heard; speaks comfortably with minimal prompts; does not block the screen; doesn't show any distracting habits.	Exhibits minor difficulties (e.g. makes sporadic eye contact; occasionally is difficult to hear or understand; overuses prompts or does not use prompts enough; occasionally stumbles or loses place; occasionally blocks the screen; occasionally exhibits some distracting habits (um, ah, clicking pointer, etc.)).	Exhibits major difficulties with the presentation (e.g. makes no eye contact; is difficult to hear or understand; reads from prepared script; blocks the screen; exhibits distracting habits (um, ah, clicking pointer, etc.)).
Dialect	Uses proper American English.	Occasionally uses an inappropriate style of English-too conversational; uses understandable English.	Uses poor English and/or poor pronunciation.
Visual Aides	Uses visual aides effectively.	Presents visual aides that have minor errors or are not always clearly visible.	Presents multiple slides that are unclear or incomprehensible.
Appearance	Exhibits professional appearance.	Appears too casual for a professional presentation.	Appears inappropriately dressed for the occasion (e.g. wears shorts, sandals, etc.)
Listening and Response to Questions	Listens carefully and responds to questions appropriately; is able to explain and interpret results for various audiences and purposes.	Sometimes misunderstands questions; does not respond appropriately to the audience, or has some trouble answering questions.	Does not listen carefully to questions; does not provide appropriate answers, or is unable to answer questions about the presentation material.