



Suzanne and Richard Pieper Family  
Foundation Annual Report  
**2022-2023 Academic Year**

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## Executive Summary

The 2022-23 academic year is the first year Dr. Michael Sevier has served as the Chair for Servant-Leadership within the CREATE Institute at the Milwaukee School of Engineering (MSOE). The chair is very grateful for the support of the CREATE Institute which allowed him to focus primarily on servant-leadership specific activities, especially regarding the development of a new assessment strategy to measure servant-leadership development within MSOE. In 2022-23, this was primarily accomplished by aligning Student Satisfaction Index (SSI) survey results with servant-leadership characteristics. While the assessment strategy presented in this report is not all-encompassing, the survey did provide useful data to direct how to expand the servant-leadership mindset throughout MSOE during the current 2023-24 academic year.

## 2022-2023 Annual Report Structure

This report is organized according to the criteria as listed on the reverse side of the award letter. The seven criteria are:

**Criterion 1:** Outcomes baseline data - baseline committed, documented, established

**Criterion 2:** Sound acceptance of servant-leadership with students and faculty through their interest, voluntary inclusion in programs, organizations

**Criterion 3:** Outcomes measures - seniors, graduate in the workplace

**Criterion 4:** Phenomenally above demographic norms

**Criterion 5:** Breakthrough venture that promises new beginnings in acts of goodness - on campus, community, collaborations, in our world

**Criterion 6:** An excellent year in carrying out all elements of the missions of the chair as agreed on accepting the chair

**Criterion 7:** A servant leader (past student or faculty) that leads at an element or segment of our world

The first two criteria above are not addressed in this report because they are the baseline for the original appointment of a Chair for Servant-Leadership.

Each criteria section begins with a summary of the work accomplished related to the specific criteria during the 2022-2023 academic year, then the goals that were established last year are listed and efforts relating to those goals are explained. Finally, each criteria section concludes with goals for the upcoming 2023-2024 academic year in relation to the criterion.

## Criteria 3 & 4: Outcomes Measures Compared to Demographic Norms

### Summary of Work from 2022-2023 Academic Year – Criteria 3 & 4

#### Introduction

The method of assessing servant-leadership growth at MSOE in this report combines previous measures with an approach that correlates data from the Student Satisfaction Inventory (SSI) with each of Spears' Ten Characteristics of Servant-leadership.<sup>1</sup> Note that differences between departments will often be provided as a diagnostic to determine which departments are doing well and which may require extra attention moving forward.

#### Community Service Engagement

The data related to this outcome was captured through the administration of the Student Satisfaction Index (SSI) in Spring of 2023 for the 2022-2023 academic year. The statement used to assess this measure was:

*Community service opportunities have made a positive contribution to my college experience.*

From which students selected one of the following Likert scale choices:

1. Definitely not
2. Probably not
3. Maybe not
4. I don't know
5. Maybe yes
6. Probably yes
7. Definitely yes

In 2023, students reported a satisfaction index of 4.90 which is a dramatic increase from 4.37 in 2019. The 0.53 increase is statistically significant at the 0.001 level and suggests that MSOE is still improving on its commitment to incorporate the high-impact practice of service-learning into courses at MSOE as well as through student organization activities and campus events. Note that the largest reported ratings among the departments were in CAECM (Civil and Architectural Engineering and Construction Management), Mathematics, and the school of nursing at 4.95, 5.10 and 5.43 respectively. The lowest reported ratings among the departments were the Raider School of Business (3.73), Humanities, Social Sciences, and Communication (4.33), and Mechanical Engineering (4.48).

It is important to note that Servant-Leadership at MSOE recognizes that participation in community service does not fully reflect the spectrum of servant-leadership. However, as Greenleaf states, "The servant-leader is servant first... It begins with the natural feeling that one

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<sup>1</sup> Spears, Larry C. "Character and Servant Leadership: Ten Characteristics of Effective, Caring Leaders," *Journal of Virtues & Leadership* 1, no. 1 (2010): 25-30

wants to serve, to serve first.” Therefore, we believe that this metric can be an indicator of servant-leadership potential within the student body.

Alumni Measures in Servant-leadership

Last year’s report included data regarding alumni engagement in community service from a fall survey in 2022. Since the survey had a low response rate, the report acknowledged that it would like to find new methods to assess servant-leadership amongst its alumni. Such methods are still being investigated. In the interim, MSOE would like to report data indicating that our students are in high demand due to the reputation of the value they can provide. Last year MSOE graduates had a 99% placement rate. Additionally, the table below shows the highest ratio of employers to students at the MSOE career fair last fall in comparison with other peer institutions.

School	Number of Employers	Number of Students	Employer to Student Ratio
<b>Milwaukee School of Engineering</b>	<b>364</b>	<b>2,581 students</b>	<b>1:7</b>
Rose-Hulman Institute of Technology	281	2,150 students	1:8
UW-Platteville	382	2,942 students	1:8
Marquette	114	1,120 students	1:10
Michigan Tech	373	7,073 students	1:19
UW-Milwaukee	102	2,079 students	1:20
UW-Madison	182	6,000 students	1:33
Illinois Institute of Technology	108	5,115 students	1:47

While this also is not a direct indicator of servant-leadership, MSOE believes that it does offer a glimpse. Although servant-leadership is primarily geared towards effectively helping humanity both within institutions and those they serve, the adoption of servant leader attributes makes one more effective in general. For example, to successfully complete a complex project on time, one must be aware of what is involved and who different stakeholders are. They must listen to understand from various stakeholders and must conceptualize a solution based on the information they gather. We also believe that the large number of employers at MSOE career fairs indicates that MSOE alumni exhibit leadership potential to move up through the company and inspire company leaders to recruit new MSOE students.

Once again, the Office of Servant-Leadership recognizes that this measure is insufficient as is. For that reason, we are currently working with the Career Connections Center at MSOE to develop better methods to assess MSOE alumni performance, particularly with respect to aspects of servant-leadership.

Student Engagement in Servant-Leadership

The third baseline outcome relates to student engagement in servant-leadership. The data for 2022 were captured through the administration of an annual fall faculty survey. The question used to assess this measure was:

*Did you include any of the following learning outcomes/opportunities within your course this term? (check all that apply)*

- *Considered how their actions and behaviors affected others*
- *Identified personal strengths and skills for improvement*
- *Enhanced listening skills*
- *Valued other perspectives*
- *Discussed ethical standards in the workplace*
- *Identified what has influenced their personal ethics*
- *Compared leadership frameworks*

Results from the 2022-2023 academic year faculty survey continue to provide strong evidence of integrated servant-leadership development within the academic experience at MSOE. A total of 82% of MSOE faculty have integrated characteristics of servant-leadership development into at least one of their courses and 72% of all courses taught at MSOE now provide students with the opportunity to practice one or more aspects of servant-leadership development.

From the above survey, the direct impact on students can be estimated. The following table depicts a summary of the fall faculty survey data related to servant-leadership development:

<b>Fall 2022 Faculty Survey Summary Related to Servant-Leadership Development</b>					
<b>Number of Courses with Servant-Leadership Development Predicted per Student</b>	<b>Freshman</b>	<b>Sophomore</b>	<b>Junior</b>	<b>Senior</b>	<b>Total Students</b>
0	3	30	11	5	49
1	53	101	48	38	240
2	170	160	175	120	625
3	278	172	165	186	801
4	206	133	126	144	609
5	32	32	46	88	198
6	2	5	1	11	19
<b>Totals</b>	<b>744</b>	<b>633</b>	<b>572</b>	<b>592</b>	<b>2541</b>

Based on the analysis summarized above, an estimated 98% of students at MSOE take at least one course that contains aspects of servant-leadership development. This is comparable to the results from the 2021-22 academic year which indicates that MSOE continues to have a high standard of servant-leadership development since the adoption of the MSOE Mindset and the collaboration between the CREATE Institute and the Office of Servant-Leadership at MSOE.

Analysis of Student Satisfaction Inventory Results

As mentioned earlier, Student Satisfaction Inventory (SSI) survey results from the 2022-23 academic year were correlated with each of Spears’ Ten Characteristics of Servant-leadership to assess the current state of servant-leadership development at MSOE. Appendix A.1 lists each of the SSI statements used to assess each of the servant-leadership characteristics. Similar to the SSI question assessed earlier regarding community service, each of the SSI statements assessed follow a seven-point Likert scale with 7 being the most positive, 1 being the most negative and 4 being neutral. The table below shows a summary of how MSOE compares to other private 4-year institutions in the Midwest and nationwide as well as itself from the last time the SSI was administered.

	Private 4-year Institutions - Midwest	Private 4-year Institutions - Nationwide	MSOE General 2022-23	MSOE General 2018-19
<b>Spears 10 Characteristics of Servant-leadership</b>	<b>5.73</b>	<b>5.59</b>	<b>5.12</b>	<b>5.33</b>
Listening	5.68	5.82	5.55	5.62
Empathy	5.69	5.77	5.45	5.55
Healing				
Awareness	5.69	5.45	4.91	5.20
Persuasion				
Conceptualization	5.92	5.48	4.87	5.11
Foresight	5.92	5.48	4.87	5.11
Stewardship				
Commitment to the growth of people	5.68	5.68	5.29	5.47
Building community	5.56	5.50	4.88	5.23

According to this table, the results show MSOE scoring lower than itself in the 2018-19 school year. The difference appears to be small and could partially relate to students still recovering from the global pandemic. However, lower scores in each category raises concern. Additionally, MSOE scores lower than the average for private 4-year institutions both in the Midwest and nationally. Lower scores are present in every category measured with the largest gaps in Awareness, Conceptualization, Foresight, and Building Community.

One possible reason that MSOE scores lower than the other institutions is that the vast majority of the respondents (83%) are from engineering departments. Engineering is known to be a rigorous discipline with high transfer and dropout rates compared to other majors. MSOE is

especially renowned for its rigor which places an even higher demand on MSOE engineering students. Furthermore, at MSOE, students have limited options if they would like to transfer out of engineering.

The Office of Servant-Leadership does not suggest that the engineering emphasis or rigor is an excuse to ignore survey differences. If anything, it is a call to meet these high expectations with the requisite student support to meet those expectations. In this regard, we would like to recognize substantial efforts by the Electrical Engineering and Computer Science Department (EECS) to make the curriculum relevant and equitable for all students in recent years. This includes not only overhauling course content to better address all backgrounds but also providing substantial support to newer faculty so they can deliver high quality courses. The outcome of this support is evident when comparing the performance of EECS with the other two engineering departments at MSOE. The table below shows EECS either matching or leading in each of the servant-leadership characteristics relative to the other engineering departments.

	Departments		
	94	171	131
Number students	Civil and Architectural Engineering and Construction Management	Electrical Engineering and Computer Science	Mechanical and Industrial Engineering
<b>Spears 10 Characteristics of Servant-leadership</b>	<b>5.14</b>	<b>5.27</b>	<b>4.91</b>
Listening	5.57	5.62	5.45
Empathy	5.50	5.50	5.34
Healing			
Awareness	4.91	5.07	4.77
Persuasion			
Conceptualization	4.89	5.15	4.55
Foresight	4.89	5.15	4.55
Stewardship			
Commitment to the growth of people	5.27	5.47	5.02
Building community	4.94	4.95	4.70

The good news is that the 2023-24 academic year brings with it the promise of change for both the Civil and Architectural Engineering and Construction Management (CAECM) and the Mechanical and Industrial Engineering (ME) departments. Former Chair for Servant-Leadership,



Dr. DeAnna Leitzke, has recently been appointed as the chair of the CAECM department. The ME department also has appointed a new chair this year, Dr. Sudhir Kaul, who has already displayed important aspects of servant-leadership in the short time he has been at MSOE.

For more information of the survey data, please see Appendix A.2 regarding how each department at MSOE performs according to each of Spears' servant-leader characteristics. Appendix A.3 is provided to highlight curriculum, teaching, and advising specific attributes from the SSI.

#### Concluding Remarks Regarding Assessment of Servant-leadership

The Office of Servant-Leadership believes that using survey information is an important step forward in the assessment of servant-leadership at MSOE. However, the office would like to continue pursuing other methods of assessment such as working with the Career Connections Center to evaluate alumni performance. Additionally, the office could work with Campus Life to compare how MSOE student organizations compare to similar organizations nationally. For example, MSOE's chapter of Engineers Without Borders (EWB) completes one international development project each year on average which is three to five times the average completion rate for EWB student chapters.

Servant-Leadership at MSOE continues to intentionally build in servant-leadership development into the project-based experiential learning opportunities that are facilitated through the CREATE Institute. The CREATE Institute facilitated 20 project-based experiential learning opportunities (see Appendix B for a complete list of these opportunities) into various courses and student organizations last year. Each of these projects explicitly integrated servant-leadership development with support from the CREATE Institute through guest workshops, reflection activities, and/or group activities. CREATE continues to grow as MSOE's hub for experiential learning dedicated to supporting the development of the MSOE Mindset. Servant-Leadership at MSOE plans to continue to work with CREATE to continuously improve that assessment of servant-leadership development through these experiential learning opportunities.

It is important to note that MSOE is dedicating more time and effort into ensuring that faculty integrate servant-leadership development into their courses. This Breakthrough Venture Promises a New Beginning in Acts of Goodness and will be explained more thoroughly in the section related to Criteria 5.

#### Progress Toward 2022-2023 Goals – Criteria 3 & 4

The single goal identified from the 2022-2023 academic year related to Criteria 3 & 4 is described below with a summary of efforts made during the year to achieve the goal:

- Develop a sustainable assessment plan to measure the impact of the Office of Servant-Leadership at MSOE.

Survey questions from the Student Satisfaction Inventory (SSI) were correlated with each of Spears' Ten Characteristics of a Servant Leader. The intention was to identify how MSOE compares with other private 4-year institutions and longitudinally. It also helps to identify which departments best exhibit certain tenets of servant-leadership and can act as a guide for other departments.

Servant-Leadership at MSOE feels that the goal for Criteria 3 & 4 during the 2022-2023 academic year was met successfully.

New Goals for 2023-2024 Academic Year – Criteria 3 & 4

For this academic year, the Chair for Servant-Leadership would like to expand methods of assessment that could be used longitudinally. Two methods are proposed below:

- Utilize survey results from the Multi-Institutional Study of Leadership (MSL) administered in 2024 to assess servant-leadership mindset development.
- Work with the Career Connections Office at MSOE to build a survey or other instrument of data collection to assess servant-leadership among MSOE alumni.

## Criterion 5: A Breakthrough Venture Promises a New Beginning in Acts of Goodness

Summary of Work from 2022-2023 Academic Year – Criterion 5

A new notable initiative relates MSOE's institutional decision to transition from a quarter-based curriculum to a semester-based curriculum. This decision was made in 2019 and is currently being executed this fall. During this process, the general education curriculum was reimagined, and MSOE adopted new institutional common learning outcomes (CLOs). These CLOs were designed to help ensure that our students graduate with the MSOE Mindset. The new general education curriculum is designed to integrate CLOs into targeted core courses as well as throughout program-level courses.

The Chair for Servant-Leadership is working closely with the CREATE Institute to ensure that all courses that incorporate leadership development, theory, and/or practice are including the teachings of Greenleaf and servant-leadership explicitly. Additionally, the Chair for Servant-Leadership is working closely with CREATE to ensure that aspects of the CLOs directly connected to servant-leadership development are integrated into course development in a sustainable and cohesive way. This is a monumental task and requires a robust support system. Initial work has included the development of an asynchronous Canvas course that includes a module which introduces faculty to servant-leadership theory. At this point rubrics have been created and will be provided to instructors teaching "Raider Core" courses (primarily through the HSSC department) in spring 2024 for consistent evaluation. Additionally, each of the

individual departments has identified how their accreditation evaluation (e.g., ABET) aligns with CLO requirements. This allows faculty to use common assessments to measure multiple outcomes. Please see Appendix C.1 for a sample alignment used for the mechanical engineering department. This table references individual dimensions of the CLOs outlined in Appendix C.2.

The impact of this effort will be far reaching. MSOE graduates approximately 600 students every year. MSOE graduates become leaders in engineering, business, and healthcare all around the world. If only 5% of MSOE graduates significantly influence the leadership styles at the organizations that hire them, society will benefit from servant-leader professionals in up to 30 engineering, business, and healthcare organizations every year – it is likely that many of these organizations could be new to servant-leadership.

Another benefit of the transition to semesters is the initiation of MSOE Cooperative Education (co-op) program which allows students to participate in a full-time employment opportunity for one semester in addition to the summer term. This long-term employment opportunity allows students the technical benefit of applying their studies to real-world industrial settings. It also requires them to work in a multi-disciplinary team and develop project management skills. In order to succeed, students must utilize aspects of servant-leadership. If these skills are not already developed, hopefully the co-op experience will set context for the student to realize why servant-leadership is important.

#### Progress Toward 2022-2023 Goals – Criterion 5

The goal identified for the 2022-2023 academic year related to Criterion 5 is:

- To develop a plan to successfully integrate servant-leadership development into the semester curricula and begin execution of the plan.

The semester transition has begun, and the Common Learning Outcomes (CLOs) have been integrated into the fabric of the semester curriculum. Rubrics have been created for the “Raider Core” courses and will be administered in the spring 2024 semester. Other departments have mapped their accreditation requirements to CLOs.

Servant-Leadership at MSOE believes that the goal for Criterion 5 during the 2022-2023 academic year was met successfully.

#### New Goals for 2023-2024 Academic Year – Criterion 5

The integration of CLOs within the MSOE curriculum is a long-term process. One of the goals for the 2023-24 academic year will be to continue work in this direction. Special attention will be paid to how CLO assessment results align with the servant-leadership characteristics.

The goals for the 2023-24 academic year related to Criterion 5 are:

- Map CLO dimensions to Servant-leadership Characteristics.
- Strengthen relations with Residence Life to help foster the servant-leadership mindset within their living-learning communities and interest communities

## Criterion 6: An Excellent Year Carrying Out the Mission of the Chair

### Summary of Work from 2022-2023 Academic Year – Criterion 6

During the fall of 2022-23 MSOE was honored as a Servant-led Organization by the Robert K. Greenleaf Center for Servant-leadership at their first annual Servant-Leader Hall of Fame Reception. Criteria for this designation included the following:

- Solid track record of fostering a culture of servant-leadership,
- Servant-leadership reflected in stated values and mission, and
- Robust philanthropic initiatives and programs in support of communities they serve and/or conduct business in



*Drs. Walz and Leitzke at the Greenleaf Center for Servant-leadership Hall of Fame Reception*

This designation clearly indicates that MSOE is functioning with the qualities of a servant-leader: building community, listening, awareness, stewardship, conceptualization, foresight, commitment to the growth of people, and empathy. Support from the Suzanne and Richard Pieper Family Foundation has played a significant role in developing MSOE as a servant-led organization. Drs. Dave Howell and DeAnna Leitzke, both previous Chairs for Servant-Leadership at MSOE, were instrumental in expanding the reach of Servant-Leadership at MSOE through the adoption of the MSOE Mindset and by establishing the CREATE Institute.

The CREATE Institute was founded in the fall of 2020 to help foster the growth of the MSOE Mindset. The MSOE Mindset is a compilation of the servant-leader mindset and the

entrepreneurial mindset. The adoption of the MSOE Mindset elevated Servant-Leadership at MSOE to a new level. Faculty, staff, and leadership at MSOE are committed to ensuring that our students graduate as leaders of character, responsible professionals, passionate learners, and value creators: this is the MSOE Mindset.

The 2022-2023 academic year provided the CREATE Institute an opportunity to look at the MSOE Mindset more holistically. As a result, the CREATE Institute has successfully established and refined the following programming and systems focused on MSOE Mindset development, which includes servant-leadership development:

- A robust new full-time faculty onboarding program that begins two weeks prior to the beginning of the fall term. The Chair for Servant-Leadership is actively involved in this onboarding process and leads a session dedicated to teaching new faculty about servant-leadership.
- New part-time faculty onboarding sessions in the fall and spring terms help prepare adjunct faculty to teach at MSOE. The Chair for Servant-Leadership is actively involved in the decision process of what content we share with new part-time faculty and supports the sessions as needed. All new part-time faculty are introduced to MSOE Mindset, including servant-leadership, during this onboarding process.
- All new first-year students are invited to attend one of eight orientation days offered during the summer before their first year at MSOE. Student Affairs organizes this programming and has asked the CREATE Institute to host one of the sessions each day. During this session, all first-year students are introduced to the MSOE Mindset, including the servant-leader mindset. The Chair for Servant-Leadership attends all the orientation days they can participate in. This is an excellent example of the benefit of the collaboration between CREATE and Servant-Leadership at MSOE. Since the CREATE staff consists of seven full-time staff and one part-time faculty, the CREATE team can support the chair, who serves their role in a part-time capacity. Therefore, when the chair is unable to attend a specific event or activity, a member of the CREATE team is always able to attend and support servant-leadership development at MSOE.
- A year-long intensive leadership development program for CREATE Student Fellows and Cove Student Scholars. This program is partially funded through the servant-leadership endowment and partially funded through a WisCLSAMP grant through the Louis Stokes Alliance for Minority Participation (LSAMP) program, which is an NSF-funded program that utilizes evidence-based recruitment and retention strategies to transform undergraduate STEM education for racial and ethnic groups historically underrepresented in STEM disciplines. Student Fellows and Scholars receive a monthly stipend to participate in this leadership development program that is led by Natalie

Villegas, Associate Director of Experiential Learning. Students benefit from professional development workshops, book clubs, reflection activities, 1:1 mentoring, peer mentoring, and other programming designed to support their leadership development and professional growth. These students also actively support project-based experiential learning on campus and serve as peer-mentors to students working on projects within their courses. The chair works closely with Natalie Villegas to ensure this leadership development program is grounded in servant-leadership theory.

- The Cove is a program on campus designed to provide students with the opportunity to explore the MSOE Mindset in our prototyping lab and collaboration space. While this program is more focused on the entrepreneurial mindset portion of the MSOE Mindset, leadership within the space is grounded in servant-leadership theory, and students using the space see servant-leadership modeled by the faculty, staff, and CREATE Fellows and Scholars who make the program a success. The Chair for Servant-Leadership continues to work closely with CREATE staff who supervise this space to ensure that servant-leadership development is top-of-mind in programming within the Cove.
- The CREATE Institute is MSOE's center for teaching and learning. Assistant Director of Faculty Development, Dr. Kris Windorski, is committed to ensuring that faculty are equipped to support MSOE Mindset development in their classrooms. Servant-leadership philosophy underpins all efforts within CREATE. An example of programming that supports servant-leadership through the activation of the tenets of both community building and commitment to the growth of people is our end-of-the-year staff appreciation day.
- The CREATE Institute is MSOE's hub for experiential learning. The Associate Director of Experiential Learning, Natalie Villegas, works with community and industry partners to bring project-based experiential learning opportunities into classrooms across campus. The Chair for Servant-Leadership has taken a more active role in intentionally building servant-leadership development into the project-based experiential learning opportunities facilitated through the CREATE Institute. The CREATE Institute facilitated 20 project-based experiential learning opportunities (see Appendix B for a complete list of these opportunities) into various courses and student organizations last year. Each of these projects explicitly integrated servant-leadership development with support from the CREATE Institute through guest workshops, reflection activities, and/or group activities. As the Associate Director of Experiential Learning, Natalie Villegas also works with the Chair for Servant-Leadership to honor requests to serve as a guest speaker in classes around campus. The CREATE Student Fellows and Scholars actively participate in guest speaker requests to provide a peer perspective on Servant-Leadership. Faculty reach out to CREATE Institute when they would like to add a session on MSOE Mindset

development into a course but are uncomfortable taking on this responsibility alone.

- Servant-Leadership at MSOE also benefits from support from CREATE’s Communication and Events Coordinator, Carrie Seidl, and Program Coordinator, Gina Zarcone. Both these coordinators support the Chair for Servant-Leadership with event/program logistics, marketing, promotion, attendance tracking, budget tracking, and other administrative tasks. For example, Carrie Seidl and Gina Zarcone lead efforts related to planning our servant-leader roundtables and Cities Tour events. Prior to 2019, the Chair for Servant-Leadership was responsible for these important functions without additional support. Now, the chair can focus their attention on strategic thinking, collaboration, relationship building, and new initiatives while leaning on CREATE staff for support in other areas.

Activities that the Chair for Servant-Leadership has specifically participated in the 2022-23 academic year include:

- Became faculty advisor for MSOE’s Engineers Without Borders (EWB) student organization. The organization has successfully completed projects ranging from pedestrian bridges to water distribution projects, averaging one project per year for over a decade. The organization works closely with Rotary Milwaukee, Rotary Guatemala, and Ingenieros Sin Fronteras (ISF) Guatemala. Students work with professional mentors to assess, design, and help implement each project gaining real-world professional experience while building relationships with the communities they serve. This last year, the team completed the El Manantial water distribution project (December 2022) and the Alconá vehicular bridge (February 2023). The El Manantial water distribution project has been enormously successful with solar power providing 100% of the electricity required to run the pump since its completion, thereby drastically reducing utility expenses for community members. The project has become a beacon for future water distribution projects in the region with other communities coming to inspect how the system operates. Similarly, the Alconá vehicular bridge was constructed more quickly than any other vehicular bridge in Guatemala through EWB which now allows children to safely cross for school and vehicles to transport goods to market. In August, the chair traveled with the EWB team to Guatemala to monitor the completed projects and check-in with each community.
- Worked with a team of three faculty members to implement “specifications grading”<sup>2</sup> in their winter courses. This is a type of mastery grading where students are given clear specifications that their work must meet, and grading most things pass/fail based on those specifications. Students are often allowed multiple attempts to achieve those specifications. Each grade has different specifications assigned with higher grades

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<sup>2</sup> Nilson, Linda B. *Specifications Grading: Restoring Rigor, Motivating Students, and Saving Faculty Time*. 1st ed. Bloomfield: Routledge, 2015;2014;2023;

corresponding to the upper levels of Bloom's taxonomy. The motivation for this is to provide more support for students while maintaining a high standard. Students are given more autonomy in choosing their grade and path through the course. It also ensures that students passing the course have successfully displayed the minimum requisite knowledge required for subsequent courses.

- Led individual roundtable events. The roundtables for the 2022-23 academic year were modified slightly to create a more casual atmosphere designed to increase openness and connection among the participants. To that end, the roundtables were held entirely online so that those attending in person would not have that distraction. The roundtable handout was simplified to a single page for more clear instructions. The "2-breath" introduction was increased to 15 minutes of casual conversation with suggested discussion topics. This was designed to help groups feel more comfortable with each other and therefore draw forth more enriching discussions. Finally, everyone in the room came together by sharing writings and/or drawings on the board as a fun way to illustrate what their group discussed.
- Held individual meetings with students who regularly attended servant-leadership roundtables. The goal was to learn about their interests and see if there was anything CREATE or the Office of Servant-Leadership could do to help them realize their goals. The following are two notable examples of what occurred following these meetings:
  - A nursing student designing and presenting a "Stop the Bleed" event in May 2023 (Stop the Bleed month). The student has history in emergency response and knows that the most critical moments after trauma often occur before emergency personnel can arrive. Therefore, the student wanted to prepare MSOE students, staff, and faculty with requisite knowledge to help someone in need if they are the first on the scene.
  - An industrial engineering student who used to work at a physical therapy clinic noticed that many of the remedies prescribed were common for many ailments. However, many clients would have to wait before they could schedule an appointment. Since it is important to address injuries quickly before they get worse, this student is now working to build an app that clients can use to help address their ailment until they are able to schedule an appointment.
- Worked with local non-profits to help facilitate relationships between MSOE and these organizations. These non-profits include Tricklebee café, Big Brothers Big Sisters Milwaukee, All Hands Boatworks Milwaukee, and Learn Deep Milwaukee.
- Presented and held discussions about Servant-leadership for student organizations such as Engineers Without Borders, Student Nurses Association, CREATE Student Fellows, Cove Scholars, RCAS Success Allies, and the Carter Living Learning Community. This was also done for classes upon the request of individual faculty members.
- Chair committee responsible for reviewing and approving applications to the Global Humanitarian Fund (GHF) and International Leadership Initiatives (ILI). Both grants are



designed to support humanitarian efforts. The main difference is that the ILI is primarily geared towards international projects involving a substantial leadership component by the students. Students receiving ILI funds were also required to read Kent Keith's "The Case For Servant-leadership" prior to travel and, upon their return, provide a reflection paper on how their understanding of servant-leadership has evolved based on their travel experience. During this year, the grants have supported the following efforts:

- MSOE Global Brigades organization medical brigade and public health brigade trip to Honduras in February 2023. One of the reflection pieces from this trip includes: "[Global Brigades] does not want to just come to a community, give them money, and build houses, roads, sewers, and infrastructure because it is not a sustainable approach for the future. Our goal must be to empower the local community to be able to improve their environment by themselves."
- Engineers Without Borders (EWB) implementation trip for the Alconá bridge in Joyabaj, Guatemala. Please note that the chair has removed themselves from both the application process and the selection process due to the conflict of interest arising from their shared role as faculty advisor for EWB. One of the students wrote the following reflection from their trip: "One of the key principles of servant-leadership that was constantly on my mind while in Alconá was listening... Something I always tried to implement while on site was asking the community members if they had any thoughts on ways to do things. I worked in the carpentry shop for the majority of the trip, and the community members gave me several good ideas including things like using guide pieces of wood to make cutting the lumber more efficient. Listening goes beyond this though. We listened to stories about their lives, families, and community that gave us a deeper understanding of our partnership and work."
- Supporting travel to present about a first-generation computer application to teach financial literacy at the IST-Africa 2023 conference in Pretoria, South Africa. The primary goal of this travel was to find African partners to field test the latest version of the computer application developed by an MSOE alumnus. Note that this project was only supported by GHF and therefore student essays were not required.

#### Progress Toward 2022-2023 Goals – Criterion 6

The following goal was identified in last year's report for the 2022-2023 academic year:

- To develop a plan to successfully expand the reach of Servant-Leadership at MSOE.

Servant-Leadership is currently expanded throughout the school formally through administering common learning outcomes in courses, project-based learning in courses, presentations to student organizations, classroom presentations, faculty development presentations, and servant-leadership roundtables. However, the SSI survey results still indicate

significant room for improvement. The chair believes that this improvement should be focused on the pedagogical structure, performance evaluation, and advising practices within individual departments. The institution as a whole has embraced “Relationship-Rich Education”<sup>3</sup> but there are still many obstacles towards realizing its potential such as not recognizing the contributions of “relationship-driven” educators and inadequately preparing faculty for advising roles they are thrust into.

The SSI results also indicate that some departments perform better than others. To that end, the chair recommends first learning from the Electrical Engineering and Computer Science department what they have done to successfully address challenges in their department and what they are currently working towards. Then the chair would like to use this information to help build a vision for the Mechanical Engineering department in conjunction with the new chair and other faculty members. The hope is that this process will create measurable changes that can be used to influence efforts in other departments.

The chair believes that the goal for Criterion 6 during the 2022-2023 academic year was met successfully.

#### New Goals for 2023-2024 Academic Year – Criterion 6

The first goal for the 2023-24 academic year related to Criterion 6 relate to the plan outlined above. The second goal is intended to help future chairs when they onboard to the position. While the current chair is grateful for the help provided by three previous chairs during his onboarding process, the chair recognized that there were many nuances specific to operating under the umbrella of the CREATE Institute. For this reason, the current chair would like to document his experience to help future chairs more easily navigate their role within CREATE and increase their effectiveness weaving the servant-leadership mindset into the fabric of MSOE.

- Work with the chair and faculty of the Mechanical Engineering department to create a vision for improving the student educational experience using servant-leadership methods.
- Put together an onboarding plan for future chairs of servant-leadership.

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<sup>3</sup> Felten, Peter, and Leo M. Lambert. *Relationship-rich education: How human connections drive success in college*. JHU Press, 2020.

## Criterion 7: A Servant Leader that Leads at an Element or Segment of Our World

This final criterion has become more important as Servant-Leadership at MSOE has matured and grown. According to Greenleaf, the best test for servant-leaders and servant-led organizations is “do those served grow as persons? Do they, while being served, become healthier, wiser, freer, more autonomous, more likely themselves to become servants?” This year, MSOE would like to nominate Jeff Hanson for the contributions he has made locally and internationally at Digital Bridge in Milwaukee.

The current chair for servant-leadership first met Jeff at a “Collab Labs” event from Learn Deep Milwaukee. These events are geared towards improving education within Milwaukee. When chatting with Jeff, the chair was excited to learn not only about the great work he does with Digital Bridge, but that he considers former chair David Howell as a pivotal mentor in his life. Jeff began his journey as an MSOE student signing up for a servant-leadership project to help establish a computer lab in Kenya. This experience inspired Jeff to begin “Project Community Computers” in 2009, a student organization dedicated towards helping local Milwaukee nonprofits with their technological needs. Upon graduation, the student organization transformed to become Digital Bridge.

Digital Bridge offers easy, efficient, and safe electronics recycling and is the only company in southeastern Wisconsin to be NAID AAA certified in data security. However, the true heart of Digital Bridge is, as the name implies, bridging the divide between those who have access to technology and those who do not. They do this by refurbishing donated electronics and providing it to people both locally and internationally who would not otherwise have access. One example of their generosity was during the global pandemic when Digital Bridge partnered with the CREATE Institute, the Boys and Girls Club of the Greater Milwaukee Area, and Milwaukee Public Schools to provide 100 refurbished computers and desks for students in need.<sup>4</sup>

The most important aspect, as Jeff would quickly point out, is working with people to make sure they not only have access to the technology but can also integrate it into their life. This is the most challenging aspect of any service project but is the most crucial aspect when making lasting change and is a sign of a true servant leader. To that end, Digital Bridge has set up over 20 computer labs locally and globally to not only provide access but also lasting technological support. We are excited to nominate Jeff Hanson for the global impact he and his company has made and are especially honored that the origins of this impact are rooted in the Office of Servant-Leadership at MSOE.

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<sup>4</sup> <https://www.msoe.edu/about-msoe/news/details/msoe-desk-drive-provides-milwaukee-students-with-proper-workspaces-and-computers-for-virtual-learning/>

## Looking Ahead to 2023-2024

The Office of Servant-Leadership at MSOE is motivated to make a substantial impact this year. The following is a summary of the goals for 2023-2024:

- Utilize survey results from the Multi-Institutional Study of Leadership (MSL) administered in 2024 to identify servant-leadership performance.
- Work with the Career Connections Office at MSOE to build a survey or other instrument of data collection to assess servant-leadership among MSOE alumni.
- Map CLO dimensions to Servant-leadership Characteristics.
- Strengthen relations with Residence Life to help foster the servant-leadership mindset within their living-learning communities and interest communities
- Work with the chair and faculty of the Mechanical Engineering department to create a vision for improving the student educational experience using servant-leadership methods.
- Put together an onboarding plan for future chairs of servant-leadership.

The above goals will be updated based on feedback from the board.

## Appendix

### Appendix A.1 – SSI Correlation with Servant-leadership

The following questions from the Student Satisfaction Inventory (SSI) are used to evaluate various servant-leadership characteristics at MSOE.

<b>Characteristic #1: Listening</b>
My academic advisor is approachable.
Administrators are approachable to students.
Library staff are helpful and approachable.
Counseling staff care about students as individuals.
Faculty are usually available after class and during office hours.
<b>Characteristic #2: Empathy</b>
My academic advisor is approachable.
Administrators are approachable to students.
Library staff are helpful and approachable.
Counseling staff care about students as individuals.
<b>Characteristic #3: Healing</b>
N/A
<b>Characteristic #4: Awareness</b>
Faculty are fair and unbiased in their treatment of individual students.
Faculty take into consideration student differences as they teach a course.
There is a strong commitment to racial harmony on this campus.
<b>Characteristic #5: Persuasion</b>
N/A
<b>Characteristic #6: Conceptualization</b>
Faculty take into consideration student differences as they teach a course.
The quality of instruction I receive in most of my classes is excellent.
<b>Characteristic #7: Foresight</b>
Faculty take into consideration student differences as they teach a course.
The quality of instruction I receive in most of my classes is excellent.
<b>Characteristic #8: Stewardship</b>
N/A
<b>Characteristic #9: Commitment to the Growth of People</b>
The campus staff are caring and helpful.
Faculty care about me as an individual.
My academic advisor is concerned about my success as an individual.
My academic advisor helps me set goals to work toward.
Counseling staff care about students as individuals.
I am able to experience intellectual growth here.
Academic support services adequately meet the needs of students.
The quality of instruction I receive in most of my classes is excellent.
This institution shows concern for students as individuals.

New student orientation services help students adjust to college.
Faculty are usually available after class and during office hours.
<b>Characteristic #10: Building Community</b>
Most students feel a sense of belonging here.
It is an enjoyable experience to be a student on this campus.
Students are made to feel welcome on this campus.
I can easily get involved in campus organizations.
This institution shows concern for students as individuals.
There is a strong commitment to racial harmony on this campus.

Appendix A.2 – SSI Servant-leadership Results

The following table outlines MSOE performance with respect to Spears 10 Characteristics of Servant-leadership broken down by department.

Number students	Departments							
	15	94	171	8	13	131	33	13
	Raider School of Business	Civil and Architectural Engineering and Construction Management	Electrical Engineering and Computer Science	Humanities and Social Sciences and Communication	Mathematics	Mechanical and Industrial Engineering	School of Nursing	Physics and Chemistry
<b>Spears 10 Characteristics of Servant-leadership</b>	<b>5.23</b>	<b>5.14</b>	<b>5.27</b>	<b>4.02</b>	<b>4.94</b>	<b>4.91</b>	<b>5.33</b>	<b>5.40</b>
Listening	5.77	5.57	5.62	4.91	5.47	5.45	5.78	5.81
Empathy	5.61	5.50	5.50	4.77	5.35	5.34	5.71	5.65
Healing								
Awareness	4.90	4.91	5.07	3.95	4.63	4.77	5.04	5.22
Persuasion								
Conceptualization	4.75	4.89	5.15	3.07	4.49	4.55	5.04	5.23
Foresight	4.75	4.89	5.15	3.07	4.49	4.55	5.04	5.23
Stewardship								
Commitment to the growth of people	5.48	5.27	5.47	4.34	5.28	5.02	5.61	5.57
Building community	5.39	4.94	4.95	4.01	4.89	4.70	5.10	5.07

Appendix A.3 – SSI Curriculum, Teaching, and Advising Evaluation

MSOE curriculum, teaching, and advising performance compared to previous assessment (2018-19) and other private 4-year institutions.

	Private 4-year Institutions - Midwest	Private 4-year Institutions - Nationwide	MSOE General 2022-23	MSOE General 2018-19
<b>General Questions</b>	<b>5.73</b>	<b>5.64</b>	<b>5.28</b>	<b>5.51</b>
Most students feel a sense of belonging here.	6.01	5.20	4.69	4.95
It is an enjoyable experience to be a student on this campus.	5.91	5.46	4.48	4.80
I am able to experience intellectual growth here.	6.00	5.91	5.85	6.01
There is a commitment to academic excellence on this campus.	5.31	5.82	5.80	5.98
Major requirements are clear and reasonable.	5.43	5.79	5.58	5.83
<b>Advising Questions</b>	<b>5.90</b>	<b>5.82</b>	<b>5.66</b>	<b>5.62</b>
My academic advisor is approachable.	5.96	5.99	5.85	5.77
My academic advisor is concerned about my success as an individual.	5.83	5.84	5.74	5.69
My academic advisor helps me set goals to work toward.	6.05	5.39	4.95	4.93
My academic advisor is knowledgeable about requirements in my major.	5.76	6.04	6.11	6.10
<b>Teaching Questions</b>	<b>5.61</b>	<b>5.69</b>	<b>5.33</b>	<b>5.45</b>
The quality of instruction I receive in most of my classes is excellent.	5.77	5.67	5.21	5.35
Nearly all of the faculty are knowledgeable in their field.	5.54	6.10	6.00	6.00
Faculty provide timely feedback about student progress in a course.	5.55	5.36	4.83	4.97
Faculty take into consideration student differences as they teach a course.	6.06	5.28	4.53	4.86
Faculty are usually available after class and during office hours.	5.67	6.02	5.97	5.90
The instruction in my major field is excellent.	5.24	5.82	5.49	5.54
The content of the courses within my major is valuable.	5.56	5.79	5.61	5.77
Faculty care about me as an individual.	5.65	5.66	5.12	5.40
Faculty are fair and unbiased in their treatment of individual students.	5.43	5.48	5.17	5.28



MSOE curriculum, teaching, and advising performance with respect to curriculum broken down by department

Number students	Departments					
	15	94	171	8	13	131
	Raider School of Business	Civil and Architectural Engineering and Construction Management	Electrical Engineering and Computer Science	Humanities and Social Sciences and Communication	Mathematics	Mechanical and Industrial Engineering
<b>General Questions</b>	<b>5.63</b>	<b>5.20</b>	<b>5.41</b>	<b>4.04</b>	<b>5.40</b>	<b>5.14</b>
Most students feel a sense of belonging here.	4.87	4.87	4.65	3.75	4.77	4.58
It is an enjoyable experience to be a student on this campus.	5.80	4.37	4.63	3.43	4.58	4.22
I am able to experience intellectual growth here.	5.93	5.70	6.03	4.43	5.82	5.75
There is a commitment to academic excellence on this campus.	6.00	5.64	5.96	4.88	6.25	5.67
Major requirements are clear and reasonable.	5.56	5.42	5.80	3.71	5.58	5.49
<b>Advising Questions</b>	<b>5.86</b>	<b>5.51</b>	<b>5.87</b>	<b>5.00</b>	<b>5.66</b>	<b>5.32</b>
My academic advisor is approachable.	6.35	5.80	6.08	5.14	5.42	5.53
My academic advisor is concerned about my success as an individual.	5.53	5.70	5.90	5.57	5.83	5.32
My academic advisor helps me set goals to work toward.	5.21	4.71	5.18	3.86	4.80	4.57
My academic advisor is knowledgeable about requirements in my major.	6.35	5.84	6.32	5.43	6.58	5.88
<b>Teaching Questions</b>	<b>5.49</b>	<b>5.29</b>	<b>5.58</b>	<b>3.88</b>	<b>5.08</b>	<b>5.07</b>
The quality of instruction I receive in most of my classes is excellent.	5.19	5.12	5.65	3.14	5.08	4.76
Nearly all of the faculty are knowledgeable in their field.	6.07	5.90	6.27	4.14	5.83	5.88
Faculty provide timely feedback about student progress in a course.	5.49	4.97	5.01	3.86	4.45	4.40
Faculty take into consideration student differences as they teach a course.	4.31	4.66	4.66	3.00	3.90	4.34
Faculty are usually available after class and during office hours.	6.40	5.84	6.10	5.50	5.92	5.91
The instruction in my major field is excellent.	5.63	5.48	5.90	3.86	5.17	5.04
The content of the courses within my major is valuable.	5.88	5.42	5.83	3.57	5.58	5.49
Faculty care about me as an individual.	5.34	5.16	5.33	3.86	4.83	4.87
Faculty are fair and unbiased in their treatment of individual students.	5.09	5.04	5.46	4.00	5.00	4.94

## Appendix B – 2022-2023 Projects Administered through CREATE

Project-based Experiential Learning Projects within Courses & Student Organizations						
Quarter	Faculty/Staff	Industry & Community Partners	Mentor	Department	Project Description	Artifact
Fall 2022	Diane Munzenmaier, Adjunct Assistant Professor, Physics & Chemistry Department	<b>Milwaukee School of Engineering</b>	Fabiola Ramirez Montoya, Assistant Director of Innovation, CREATE Institute	Physics & Chemistry Department	First-year biomolecular engineering students designed and prototyped 3d printed proteins.	Prototype
Fall 2022	Natalie Villegas, Assistant Director of Experiential Learning, CREATE Institute	<b>The Kellogg PEAK Initiative</b>	Natalie Villegas, Assistant Director of Experiential Learning, CREATE Institute	CREATE Institute & CAECM	Students constructed moveable room dividers.	Physical Structure
Fall 2022	Dr. Cindy Miller, Assistant Professor, Humanities, Social Science and Communication Department	<b>Mercy Housing - Jefferson Court</b>	Dr. Cindy Miller, Assistant Professor, Humanities, Social Science and Communication Department	HSC (UX)	Students applied knowledge of human-centered design to create and improve culturally appropriate community room environment for client.	Report
Fall 2022 - Spring 2023	Natalie Villegas, Associate Director of Experiential Learning, CREATE Institute	<b>Milwaukee School of Engineering - STEM</b>	Natalie Villegas, Associate Director of Experiential Learning, CREATE Institute	CREATE Institute	Students redesigned a model Hoan bridge design for new stakeholders.	Physical Structure
Fall 2022	Guy Campbell, Instructor, Mechanical Engineering Department	<b>Paralyzed Veterans of America</b>	Natalie Villegas, Associate Director of Experiential Learning, CREATE Institute	ME	Students provided marina lift chair installation recommendations for client.	Report
Fall 2022	Guy Campbell, Instructor, Mechanical Engineering Department	<b>U.S. Department of Housing &amp; Urban Development</b>	Natalie Villegas, Associate Director of Experiential Learning, CREATE Institute	ME	Students designed and created manufacturing guide for community library.	Report & Prototype
Winter 2022	Dr. Cindy Miller, Assistant Professor, Humanities, Social Science and Communication Department	<b>Milwaukee School of Engineering</b>	Dr. Cindy Miller, Assistant Professor, Humanities, Social Science and Communication Department	HSC (UX)	Students created a mural design for experiential learning centers (COVE, Applied Technology Center, and Innovent Center) stakeholders.	Presentation & Prototype

Winter 2022	Dr. Michael Carriere, Professor and Director of University Scholars Program, Humanities, Social Science, and Communication Department	<b>International Youth Tobacco Control</b>	Natalie Villegas, Assistant Director of Experiential Learning, CREATE Institute	HSC	Students aided the client in fundraising and created educational events to strengthen IYTC's programs and expand its audience.	Presentation & Report
Winter 2022	Dr. Lauren Beverung, Assistant Professor, Humanities, Social Science, and Communication Department	<b>Milwaukee Public Schools - Cass Street School</b>	Dr. Lauren Beverung, Assistant Professor, Humanities, Social Science, and Communication Department	HSC	Students created children's books for students to learn about their developing brain.	Presentation & Prototype
Spring 2023	Amii LaPointe, Adjunct Assistant Professor, Humanities, Social Science, and Communication Department	<b>Milwaukee School of Engineering</b>	Natalie Villegas, Assistant Director of Experiential Learning, CREATE Institute	HSC (UX)	Students researched, designed, and prototyped a wellness cart for MSOE students.	Presentation & Physical Product
Spring 2023	Amii LaPointe, Adjunct Assistant Professor, Humanities, Social Science, and Communication Department	<b>Milwaukee School of Engineering</b>	Natalie Villegas, Assistant Director of Experiential Learning, CREATE Institute	HSC (UX)	Students researched, designed, and created social media tools/tutorials for The Cove program. The program focuses on the development of the Entrepreneurial Mindset on campus.	Presentation & Digital Product
Fall 2022 - Spring 2023	Dr. Katrina Moskalik, Associate Professor, Rader School of Business	<b>Community Water Services</b>	Dr. Katrina Moskalik, Associate Professor, Rader School of Business	Business	Student created a database to store water collection sample data for client.	Report & Digital Product
Spring 2023	Dr. David Howell, Professor, Humanities, Social Science, and Communication Department	<b>The Indian Council of the Elderly</b>	Natalie Villegas, Assistant Director of Experiential Learning, CREATE Institute	HSC	Students planned and supervised a community service project in which they prepared 60 meals for a community center.	Presentation & Event
Spring 2023	Dr. David Howell, Professor, Humanities, Social Science, and Communication Department	<b>Milwaukee School of Engineering</b>	Natalie Villegas, Assistant Director of Experiential Learning, CREATE Institute	HSC	Students designed and provided recommendations for a common area layout within a residence hall to enhance collaboration and community amongst residents.	Presentation & Digital Prototype

Spring 2023	Dr. David Howell, Professor, Humanities, Social Science, and Communication Department	<b>Milwaukee School of Engineering</b>	Fabiola Ramirez Montoya, Assistant Director of Innovation, CREATE Institute	HSC	Students designed and prototyped a physical product that depicted a shared narrative with peer students.	Presentation & Prototype
Spring 2023	Mark Ryan, Instructor, Mechanical Engineering Department	<b>Milwaukee School of Engineering</b>	Fabiola Ramirez Montoya, Assistant Director of Innovation, CREATE Institute	ME	First-year students in Mechanical Engineering designed and prototyped an autonomous vehicle.	Presentation & Report
Spring 2023	Dr. Bill Farrow, Associate Professor, Mechanical Engineering Department	<b>Milwaukee School of Engineering</b>	Fabiola Ramirez Montoya, Assistant Director of Innovation, CREATE Institute	ME	First-year students in Mechanical Engineering designed and prototyped an autonomous vehicle.	Presentation & Report
Spring 2023	Dr. Joshua Mitchell, Dean of Residence Life, Residence Life	<b>Milwaukee School of Engineering</b>	Natalie Villegas, Associate Director of Experiential Learning, CREATE Institute	Residence Life	Students conducted a needs assessment of potential maker space in residence hall.	Report
Spring 2023	Dr. Anne-Marie Nickel, Professor, Physics & Chemistry Department	<b>Saint Joan Antida</b>	Dr. Anne-Marie Nickel, Professor, Physics & Chemistry Department	Physics & Chemistry Department	Students created and supported an outreach event with a local high school that focused on food chemistry.	Event
Spring 2023	Natalie Villegas, Associate Director of Experiential Learning, CREATE Institute	<b>Milwaukee School of Engineering - STEM Center</b>	Natalie Villegas, Associate Director of Experiential Learning, CREATE Institute	CAECM	Students constructed display benches for Hoan Bridge project based on design given by design student team.	Physical Structure

## Appendix C.1 – Sample Mapping of Accreditation Requirements with CLOs

The following table shows a mapping of ABET accreditation requirements for the Mechanical Engineering Department with institutional Common Learning Outcomes (CLOs).

<b>ABET List</b>	<b>CLO List</b>
1.) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	<b>TC: Think Critically (D1, D2, D3, D5)</b>
	<b>IL: Integrate Learning (D2, D3)</b>
	<b>EC: Exhibit Curiosity (D1, D3)</b>
2.) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	<b>IL: Integrate Learning (D2, D3, D4)</b>
	<b>DEU: Demonstrate Ethical Understanding (D2, D3, D4)</b>
	<b>ED: Embrace Diversity (D2, D3, D5)</b>
	<b>EC: Exhibit Curiosity (D2, D3)</b>
3.) an ability to communicate effectively with a range of audiences	<b>TC: Think Critically (D5)</b>
	<b>CE: Communicate Effectively (D1, D2, D3, D4, D5, D6)</b>
	<b>ED: Embrace Diversity (D4)</b>
	<b>EC: Exhibit Curiosity (D4)</b>
4.) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	<b>TC: Think Critically (D3, D4, D5)</b>
	<b>DEU: Demonstrate Ethical Understanding (D1, D2, D3, D4, D5)</b>
	<b>ED: Embrace Diversity (D1, D2, D3, D4, D5)</b>
	<b>EC: Exhibit Curiosity (D2, D3)</b>
5.) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	<b>IL: Integrate Learning (D2, D3, D4)</b>
	<b>CS: Collaborate Successfully (D1, D2, D3, D4, D5)</b>
	<b>ED: Embrace Diversity (D1, D2, D3, D4)</b>
6.) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	<b>EC: Exhibit Curiosity (D2, D3)</b>
	<b>EC: Exhibit Curiosity (D1, D3)</b>
	<b>IL: Integrate Learning (D2)</b>
7.) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	<b>TC: Think Critically (D1, D2, D3, D4, D5)</b>
	<b>EC: Exhibit Curiosity (D1, D5)</b>
	<b>IL: Integrate Learning (D1, D2, D3, D5)</b>

Appendix C.2 – Dimensions for the Common Learning Outcomes (CLOs)

	<b>TC Think Critically</b>	<b>IL Integrate Learning</b>	<b>CE Communicate Effectively</b>	<b>DEU Demonstrate Ethical Understanding</b>	<b>CS Collaborate Successfully</b>	<b>EC Exhibit Curiosity</b>	<b>ED Embrace Diversity</b>
<b>Dimension 1</b>	Analysis	Connections to Experience	Purpose and Context of Communication	Ethical Self-Awareness	Fosters Constructive Team Climate	Exploration	Self-Awareness
<b>Dimension 2</b>	Analytical reasoning	Connections to Discipline	Content Development	Understanding Ethical Perspectives or Concepts	Facilitates the Contributions of Team Members	Perspectives	Foundations of Diversity
<b>Dimension 3</b>	Drawing conclusions	Transfer	Genre and Disciplinary Conventions	Ethical Issue Recognition	Responds to Conflict Within Team	Intellectual Inquiry	Intercultural Understanding
<b>Dimension 4</b>	Representation	Solving Problems	Sources and Evidence	Application of Ethical Perspectives or Concepts	Individual Contributions Outside of Collaborative Time	Discourse	Cultural Diversity Connections
<b>Dimension 5</b>	Evaluate and Interpret Information	Connecting, Synthesizing, Transforming	Control of Syntax and Mechanics	Evaluation of Ethical Perspectives or Concepts	Evaluates Achievement of Common Goal	Innovation	Applying Knowledge to Address Social Equity Barriers
<b>Dimension 6</b>			Delivery (for oral only)				

