SUNY Poly's S-STEM Scholar Initiative

"Supporting Degree Completion in Engineering and Engineering Technology Programs through Experiential Learning and Self-Directed Professional Development"

~Cohort 1 First Year Seminar Feedback~

A Report To:

SUNY Poly

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Inspired Social Research & Program Evaluation

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Introduction

In Fall 2022, SUNY Polytechnic Institute (SUNY Poly) contracted with Dr. Megan Mullins and her team of evaluators to conduct evaluation activities for SUNY Poly's newly awarded National Science Foundation funded S-STEM Scholarship program titled *"Supporting Degree Completion in Engineering and Engineering Technology Programs through Experiential Learning and Self-Directed Professional Development."* The long-term goal of this program is to break down barriers to degree completion within the programs of Civil Engineering, Civil Engineering Technology, Mechanical Engineering, and Mechanical Engineering Technology (CME&ET). In pursuit of this goal, SUNY Poly will provide a total of 65 one-year scholarships to 20 unique students in CME&ET. Students selected as Scholars will include both first year and transfer students. Over the grant period, this program will provide the following:

- "Know One Be One" recruitment experience for interested high school students,
- S-STEM scholarships to 20 unique students through degree completion,
- An S-STEM First Year Experience Course,
- One-on-one academic advisement and mentoring for S-STEM scholars,
- Mobius subscriptions for 1st year S-STEM scholars for Math skills support,
- S-STEM Seminar and Workshop series,
  S-STEM Scholars professional development fund,
- Experiential learning opportunities for Scholars, and
- FE Review course, purchase of FE review materials for independent study, and supports to increase student completion and passing of the FE exam.

The report below summarizes results from a survey distributed to Scholars in Cohort 1 of SUNY Poly's S-STEM program during the Fall 2024 semester. The questionnaire collected information regarding Scholars' First Year Seminar experience and outcomes, including key takeaways, growth in academic skills, helpfulness of seminar activities, confidence to succeed as scholarship recipients, and overall satisfaction and recommendations for improvement. A total of nine Cohort 1 Scholars responded to the survey.[1] The results presented in this report can help organizers understand the impact of the First Year Seminar and inform improvements to the offering for future Scholars.

Survey Results

Key Takeaways & Learning Outcomes

Respondents were first asked to describe any key takeaways from the First Year Seminar regarding how to be a successful student during their first year at SUNY Poly. In response, Scholars explain that the seminar 1) helped them understand the importance of utilizing available campus resources, and/or 2) introduced them to a range of academic and professional skills, processes, and opportunities (see next page for examples).

[1] Unless otherwise noted, the sample size for all analyses is nine (n=9).

All Quotes:

Campus Resources

"The main thing I learned over the first semester was to take advantage of all of the resources, help, and opportunities offered on campus."

"Use campus resources."

"I can go to tutor sessions and go to office hours if I am struggling in any classes."

"Take advantage of resources, make them if you have to via friends."

"I was able to learn of the resources available to me here at SUNY Poly and what they offer help in and also where to find such departments."

"Be involved in group activities."

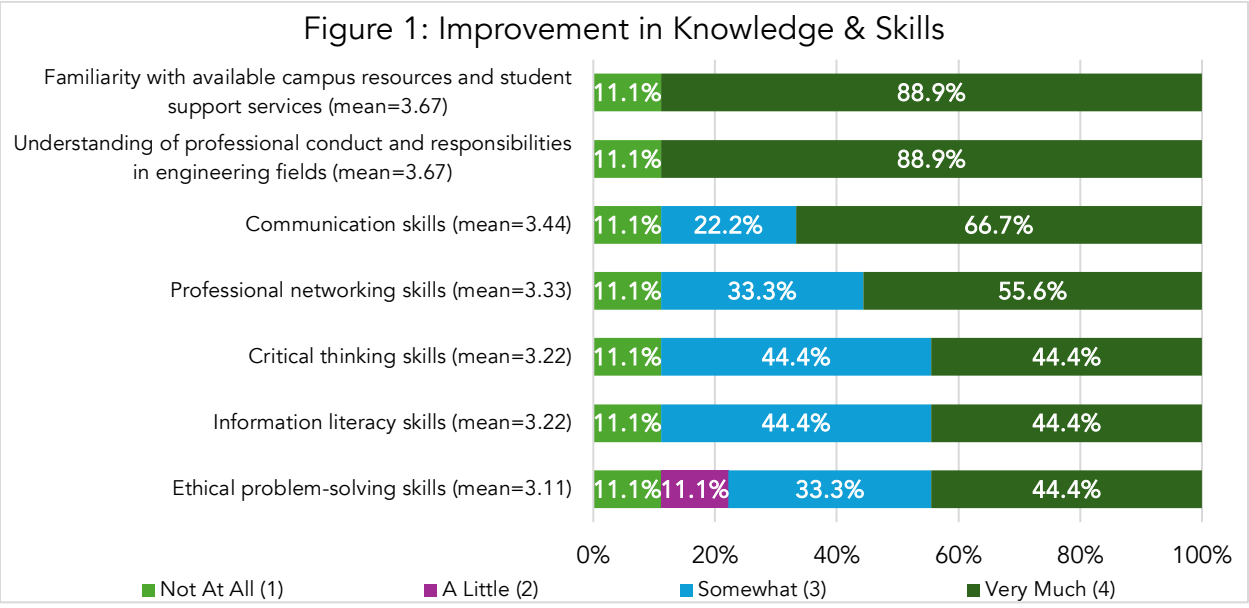
Academic & Professional Skills/Opportunities

"How to apply for a grad school; teamwork; engineering ethics; resources; internships or job opportunities; effective communication and writing skills."

"My first-year seminar really helped me understand things about the real world and about college. This helped me with managing and understanding what I need to do to be successful in college and in life."

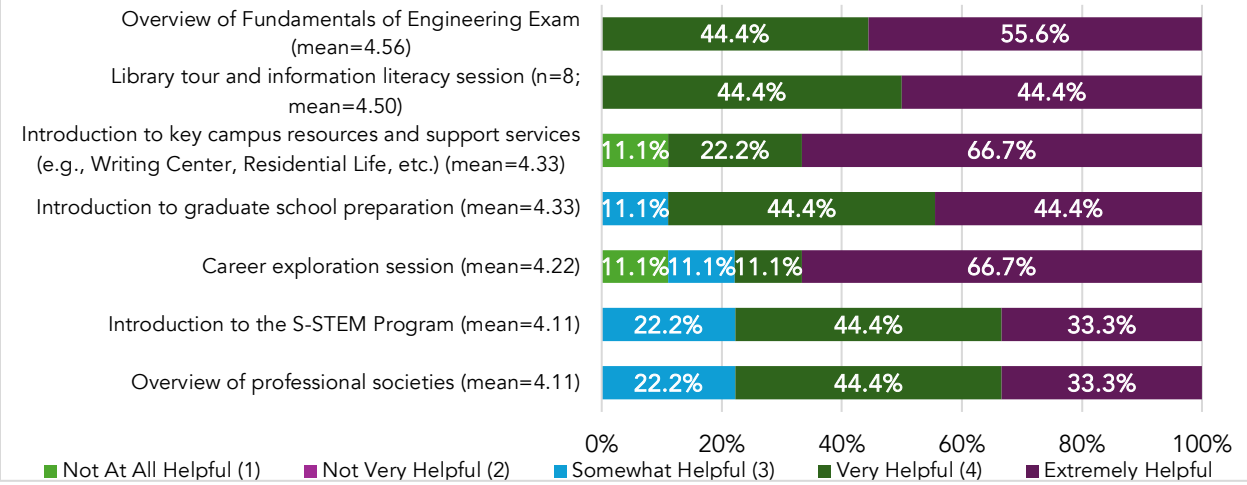
Next, using a 4-point scale, participants were asked the extent to which they feel the seminar led to improvements across seven knowledge and skill areas. Most respondents (>75%) indicate that the seminar at least "Somewhat" led to improvement in all seven areas. Scholars report that the seminar had the *greatest impact* on their familiarity with available student supports and their understanding of professional conduct and responsibilities in engineering fields and had the *least impact* on their ability to practice ethical problem-solving.

Figure 1: Improvement in Knowledge & Skills



Scholars were also asked to indicate how helpful they felt each course topic or activity was in preparing them to be successful as an S-STEM Scholar at SUNY Poly. On average, participants found the overview of the Fundamentals of Engineering Exam and the library tour and information literacy session *most helpful*. Other topics or activities receiving relatively high mean helpfulness ratings include the introduction to key campus resources and support services, the introduction to graduate school preparation, and the career exploration session.

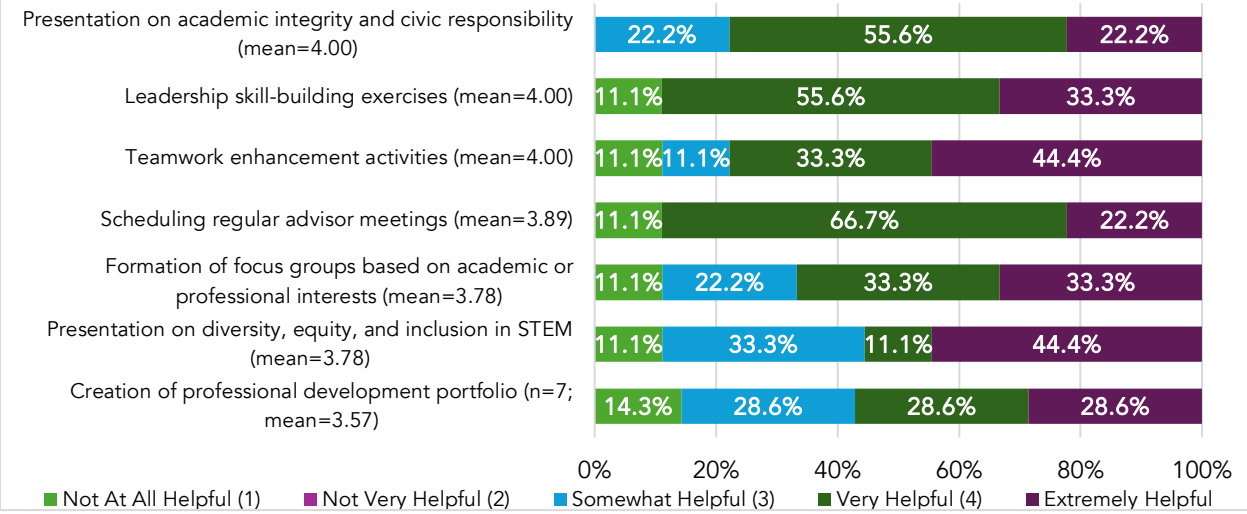
Figure 2a: Helpfulness of Seminar Components - *Highest Ratings*



Note. Respondents were given the option to select 'N/A – Not Covered or Not Present'; these responses are treated as missing.

In contrast, respondents rate the scheduling of regular advisor meetings, formation of student focus groups, the presentation on diversity, equity, and inclusion in STEM, and the creation of their professional development portfolios as activities that were least helpful in preparing them for success as S-STEM Scholars. Overall, average scores across indicators remain relatively high.

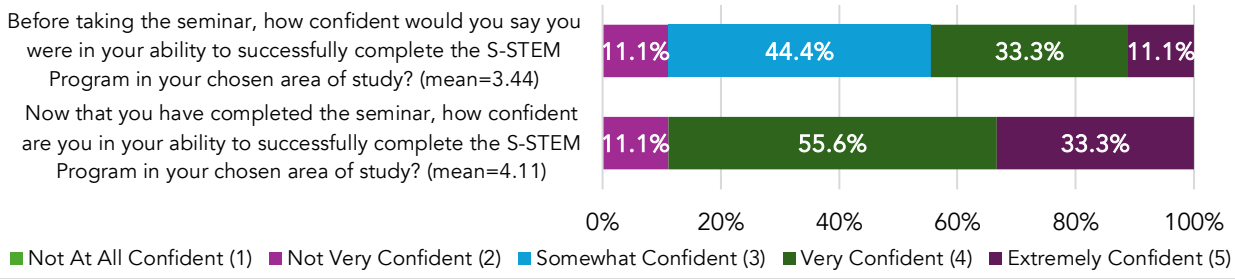
Figure 2b: Helpfulness of Seminar Components - *Lowest Ratings*



Note. Respondents were given the option to select 'N/A – Not Covered or Not Present'; these responses are treated as missing.

Additionally, using a 5-point scale, Scholars were asked to rate their confidence in their ability to successfully complete the S-STEM program both before and after attending the First Year Seminar. On average, participants report that they were "Somewhat" (3) confident in their ability to succeed as S-STEM Scholars prior to taking the seminar whereas, following the seminar, most (>85%) indicate that they are now either "Very" or "Extremely" confident that they can successfully complete the program.

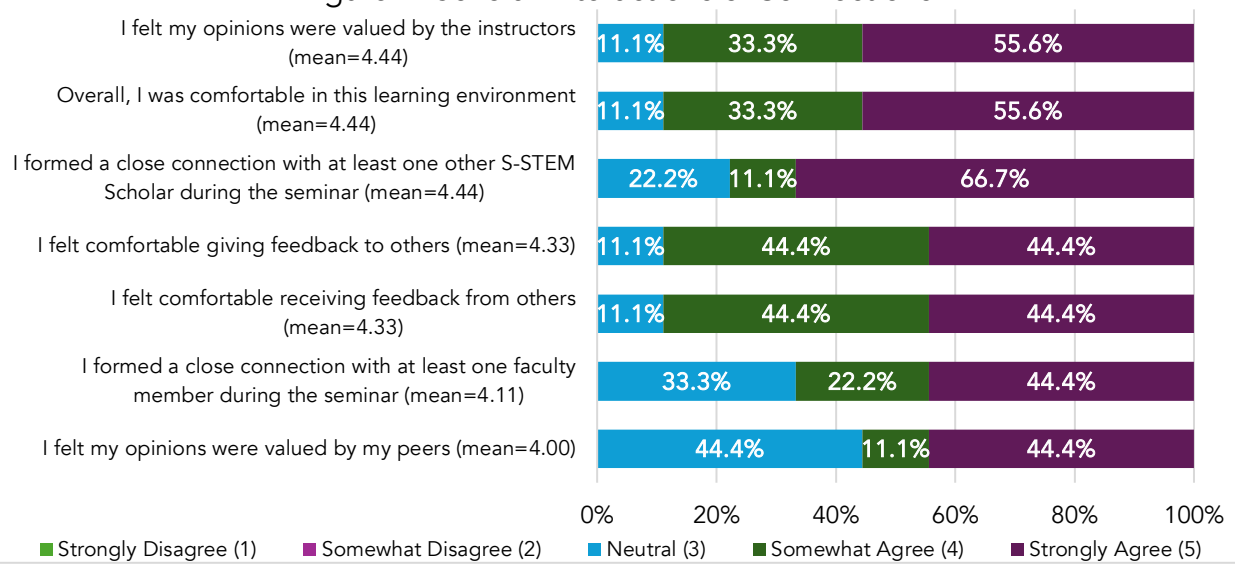
Figure 3: Scholar Confidence Before & After Seminar



Comfort, Satisfaction, & Recommendations for Improvement

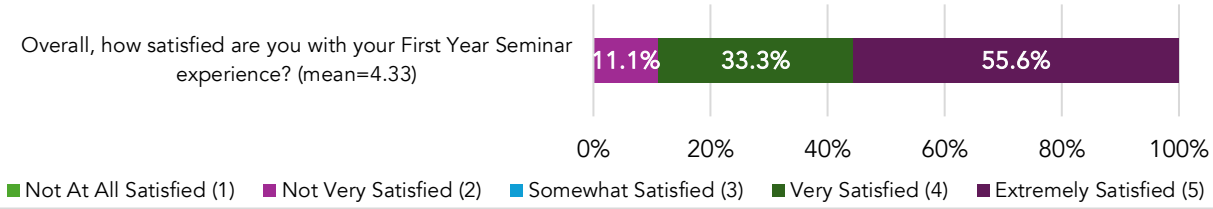
Respondents were next asked to rate their agreement with a series of statements regarding their faculty and peer interactions during the seminar and connections resulting from their participation in the offering. Responses to these items suggest that Scholars felt comfortable giving and receiving feedback during the seminar, that their opinions were valued by faculty and peers, and generally felt comfortable in this type of learning environment. Similarly, most participants (>65%) agree that they formed a close connection with at least one other S-STEM Scholar and faculty member as a result of the seminar.

Figure 4: Scholar Interactions & Connections



When asked to rate their satisfaction with the overall First Year Seminar experience, Scholars overwhelmingly report that they were either "Very" or "Extremely" satisfied with the offering (89%).

Figure 5: Satisfaction with Seminar Experience



Respondents were also asked how the seminar experience could be improved for future Scholars, with participants variably recommending the incorporation of more engaging topics and activities, providing more information about the SUNY Poly engineering program, and more thoughtful organization of the course schedule.

All Quotes:

Recommendations for Improvement

"It needs to be more engaging and hands-on."

"More engagement, less speakers."

"Probably a bit more detail [about] the engineering program."

"The arrangement of the resources discussed could have been better. Learning about what the library has to offer and how to register for tutoring would have been more helpful in the beginning than the end of the semester."

Other Comments

"I think the FYS experience is very good already. I can't think of much to better it."

"The FYS experience was perfect, and I don't think anything will need to be improved."

"I would not change a thing about this course, it's very helpful.

Lastly, participants were asked to share any lingering thoughts or questions for program organizers, with a single respondent commenting: "*I think the class covered most of what I need to know and left me with the people or office I could reach out to if I had any questions.*"

Summary & Reflection

Overall, survey results demonstrate that Cohort 1 Scholars walked away from the First Year Seminar with a better understanding of available student resources, newly formed faculty and peer connections, and with greater confidence in their academic skills and ability to succeed at S-STEM Scholars at SUNY Poly. Specifically, responses indicate that, among the seven fundamental knowledge and skill areas probed in the questionnaire, Scholars felt the seminar led to the greatest improvement in their familiarity with campus resources and understanding of professional conduct and responsibilities in engineering and had the least impact on their ethical problem-solving skills. Indeed, when asked to provide their key takeaways from the course via open-ended comment, most Scholars highlight the importance of utilizing available student supports during their time at SUNY Poly.

When asked to rate the helpfulness of each course topic or activity in preparing them for success as S-STEM Scholars, participants rate the overview of the Fundamentals of Engineering Exam and the library tour/information literacy session as most helpful and the presentation on DEI in STEM and creation of their professional development portfolio as least helpful, though most respondents provide high helpfulness ratings for all topics and activities covered in the course. Importantly, results also show that Scholars generally felt comfortable and respected throughout the course experience, that most formed close connections with faculty members and peers during the seminar, and that, upon completing the course, Scholars tend to express greater confidence in their ability to succeed in the S-STEM program.

While nearly all respondents report that they were satisfied with the First Year Seminar overall, participants provide several recommendations to improve the course for future Scholars, including incorporating more engaging activities and more information about SUNY Poly's engineering program, and following a course schedule that better corresponds with the broader first-semester student experience.

Given these findings, evaluators offer the following recommendations and reflections for consideration by program organizers:

- **Consider how to create a more engaging and hands-on experience for future Scholars**, as several respondents expressed a desire for more engaging topics and activities and given that such changes may help to increase the appeal and value of course topics rated as less helpful among current Scholars.
- **Ensure that all intended learning outcomes are sufficiently covered in the course materials and activities,** as Scholars were considerably less likely to report improvements in fundamental academic skills compared to their familiarity with campus resources and understanding of professional conduct and responsibilities in engineering.

- **Continue to emphasize available student supports for future cohorts,** as the introduction to various campus resources were considered some of the most helpful topics covered in the course, with open-ended comments confirming that familiarity with student supports was a key takeaway for most Cohort 1 Scholars.

Consideration of any of these findings and recommendations can help to improve the First Year Seminar experience for future Scholars and, ultimately, better prepare scholarship recipients to successfully complete the S-STEM Program at SUNY Poly in their chosen area of study.