

## **Freshman Peer Mentoring: Successful Continuous Improvement of the Transition Experience**

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I came to UNC Charlotte's William States Lee College of Engineering from the Space Telescope Science Institute (STScI) in Baltimore, Maryland. My 10 years of experience at STScI culminated in my final duties as a Senior Research and Instrument Analyst, and were spent working on astrophysics research, astronomical data analysis, and space-based instrumentation characterization, calibration, and experimentation. While at STScI I focused the majority of my efforts as a member of the development team for the Hubble Legacy Archive (HLA), as a member of the Cosmic Origins Spectrograph (COS) pipeline and calibration teams, and as a member of the Operations Detector Laboratory (ODL), where I worked on the characterization of spaced-based CCD detectors. Now at UNC Charlotte, I have found new passion in the education, advising, and mentoring of undergraduate engineering students.

# Freshman Peer Mentoring: Successful Continuous Improvement of the Transition Experience

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**Abstract** - The MAPS (Maximizing Academic and Professional Success) program exists to increase the retention and academic performance of students who are pursuing a degree from the University of North Carolina at Charlotte's William States Lee College of Engineering. Although the MAPS program was originally developed and implemented through National Science Foundation (NSF) funding more than two decades ago, it is now fully funded by the University as a key component of the Southern Association of Colleges and Schools (SACS) Quality Enhancement Plan (QEP). The MAPS program serves as indoctrination for engineering, engineering technology, and construction management students to learn, understand, and establish personal connections to academic success and professional development strategies, campus-wide resources, networking opportunities, and organizations. The MAPS program structure is split into two peer-led components: (1) transition, academic, and professional development coaching for students pursuing a degree in the College of Engineering and (2) Supplemental Instruction (SI) for selected gateway courses. This paper will focus exclusively on the coaching component of the MAPS program. The coaching program has evolved based on experiences and feedback from key stakeholders, leading to the continuous development of new strategies for improving participant satisfaction, academic and professional success, and retention. These enhancements have made a positive impact based on recent assessment results, to include overwhelmingly positive student participant feedback. Going forward, changes to the program will continue to be based on student participant needs and interests, with the expectation that they will continue to enrich and enhance their academic and professional experience. This paper describes, based on both quantitative and qualitative measures, how by having adopted a philosophy of continuous improvement utilizing stakeholder insights and experiences, the MAPS program has steadily grown while improving upon measures of participant satisfaction, academic and professional success, and retention.

**Index Terms** – First-year Transition, Freshman programs, Peer mentoring, Retention

## INTRODUCTION

The William States Lee College of Engineering's Maximizing Academic and Professional Success (MAPS) program has a 21-year history of supporting engineering, engineering technology, and construction management students in the pursuit of their educational and career goals. The program utilizes the talents and leadership of College of Engineering upper class students to engage, direct, and support freshmen, transfer, and continuing students, new to the pursuit of an engineering or engineering technology degree. The MAPS program is comprised of two separate support initiatives: 1) Transition, academic success, and professional development coaching, and 2) Specific first- and second-year engineering course Supplemental Instruction (SI) selection and funding. The focus of this paper is on the transition, academic success, and professional development coaching component of the program. The MAPS program was originally funded by the National Science Foundation (NSF). It is now fully institutionalized through the University of North Carolina at Charlotte's (UNC Charlotte) Southern Association of Colleges and Schools (SACS) Quality Enhancement Plan (QEP), uniquely identified at UNC Charlotte as the Prospect for Success (PFS) initiative. The goal of PFS is to enhance students' commitment to success, level of inquiry, and personal understanding of self and cultural awareness (<http://prospect.uncc.edu/resources>).

A student's personal success in the College of Engineering is ultimately a function of their motivation, decision making, level of communication, work ethic, and ability to overcome adversity. Students must consciously decide to commit, be present, and focus their attention. Successful transition into the university environment, and the College of Engineering, requires that students overcome changes in environment, support structure, workload, pace of study, personal methodologies, and thinking. As a new or continuing College of Engineering student, MAPS transition coaching provides the academic and professional development success strategies, understanding, and resources to help students make a smooth and positive transition.

New freshmen students coming directly from high school do not typically have a full understanding of the differences and extent of change that they will experience as they transition into the university environment and the pursuit of a degree in engineering. Independent living, developing new personal networks and relationships, personal schedule planning, workload management, and

effective studying, textbook usage, and exam preparation, while adapting to a much faster pace of study, are all significant changes that challenge students' ability to succeed.

Transfer students, although often experienced with college, are unfamiliar with the culture, faculty and staff, course structure, and available resources at UNC Charlotte and within the College of Engineering. Continuing students who have chosen to leave other majors and/or departments in the pursuit of an engineering, engineering technology, or construction management degree, are also unfamiliar with the culture, faculty and staff, curriculum structure, and the rigor and dedication required to be successful. MAPS strives to highlight these differences and instill independence, proactivity, dedication, and focus in program participants through personal academic and professional development strategies, and the experience-based lessons provided by the upper class coaches.

### MAPS COACHING HISTORICAL OVERVIEW

Just prior to fall 2014, during a transition in program directors, the MAPS coaching curriculum consisted of nine weekly one hour sessions between an upper class engineering student and a group of new students. The first of these sessions began the second or third week of the semester. Approximately 200 students enrolled in MAPS coaching each fall semester, and fewer than 50 students participated in the spring semester. Individual MAPS program session groups, with no constraint on the size of the group, were mentored by one or two upper class coaches, depending on schedule alignment. At that time, there was no limit to the number of sessions that one coach might facilitate on a weekly basis, and the number of sessions per coach were not balanced, as these assignments were based on coach preference.

The number of coaches hired for the fall and spring semesters were, and remain, dependent on the number of sessions available. Fewer coaches were needed in the spring semester, as many of these students tend to believe that they no longer need the scaffolding that is provided through a coaching program like MAPS. As well, the majority of interested students during the spring semesters came from much smaller groups of continuing and/or transfer students. The reduction of program participants in the spring was also a result of students' either changing majors between the fall and spring semesters, or students no longer being eligible to enroll in College of Engineering courses based on their inability to satisfy freshman progression policies. It is because of these apparent differences in student type, and characteristics, between the fall and spring semesters, that program performance is assessed from fall-to-fall, and spring-to-spring.

The MAPS coaching curriculum was designed to be interactive, relaxing, and educational, somewhat emulating a Socratic seminar-like context. During coaching sessions, students learn and begin to apply necessary fundamental

academic and professional success strategies and principles. These include, for example, developing personal time management skills and effective study habits, while learning to understand the need for networking and relationship building. Students who completed at least seven of nine sessions were, and still are, considered *Active Participants*. Historically, freshmen students who actively participate in MAPS coaching earn an average semester GPA of 3.0. Students who did not actively participate, i.e. *Inactive Participants* who attend between one and six sessions, typically earn an average semester GPA of 2.8. In comparison, students who do not participate in MAPS, i.e. *Non-Participants*, earn an average semester GPA of 2.7. It is important to note at this point that participation in the MAPS coaching program was, and still is completely voluntary.

The MAPS coaching curriculum and program structure used in fall 2014 and spring 2015, was inherited from the previous director. It was designed to guide students through exercises and discussion relating to the following topics:

- Time Management
- Study and Learning Skill Improvement
- Motivational Strategies
- Personal, Academic, and Professional Transition from Dependence to Independence
- Personal, Educational, and Professional Growth Ownership
- Networking Strategy Development

At that time, both fall and spring semester curricula and program structure were identical. The application and usefulness of these original topics have been repeatedly emphasized by program stakeholders, such as program coaches, program participants, and freshman faculty. The content and activities associated with these topics are now regularly reviewed for continuous program improvement, and new topics and activities are tested and evaluated. The goal for all future program changes is to continuously enhance the academic and professional success, and retention of program participants.

### CONTINUOUS IMPROVEMENT: PROGRAM EVOLUTION

#### I. Academic Year (AY) 2015-16

MAPS stakeholders are the primary source of input for the design and implementation of changes to the coaching curriculum. During AY 2015-16, under the auspices of the new MAPS program director, data from the following were considered:

- Institutional needs
- Prospect For Success (PFS) elements of engagement
- College of Engineering strategic plan
- Freshman students
- Peer-to-peer and participant-to-coach in-session interactions
- Weekly director-coach meetings

- Director-coach curriculum development collaboration
- How To Study In College (<http://howtostudyincollege.com/>)
- Student success in the Introduction to Engineering Practices and Principles I course (ENGR 1201)

Of the sources listed above, the documentation provided through the, “How To Study In College” (HTSIC) website was an initial primary driver of content change for MAPS coaching during AY 2014-15. Although the topics previously covered in MAPS coaching were similar to those covered in the HTSIC documentation, the logical sequencing of topics, depth and detail of information, and types of activities were more thoroughly developed in the HTSIC, as compared to previous MAPS program practices.

A secondary source that drove change in program structure during AY 2014-15, consisted primarily of feedback from freshmen students who actively participated in MAPS coaching, and who were enrolled in either the *Introduction to Engineering* or *Introduction to Engineering Technology* courses. Both introductory courses provide an end-of-semester professional development-based extra credit opportunity for students who are concurrently *Active Participants* in MAPS coaching. *Active Participants* who write and submit a one page summary discussing their experience in the MAPS coaching program can earn up to three percentage points of extra credit toward their final grade. These summaries have provided a direct link to what students do, and do not, find beneficial in the coaching program.

At the end of the spring 2015 semester, there were several curriculum- and structural enhancements under consideration based on the HTSIC and input from MAPS stakeholders. These changes were examined for program applicability and impact, and sessions were either newly developed or modified to meet the needs and desires of program stakeholders. For example, the curriculum in place at the start of the fall 2014 semester focused primarily on academic success strategies. During summer 2015, the curriculum was modified to include 14 weekly sessions each semester instead of nine sessions. Weekly sessions were designed to alternate in, and out of the classroom providing participants with the opportunity to expand their knowledge and understanding of university resources and their chosen academic and career path, in addition to improving their academic success and professional development skills. The theme design for AY 2014-15 also differed, such that the fall semester focused on academic success strategies and activities, and the spring semester focused on professional development strategies and activities. Increasing the number of sessions per semester allowed for a more diverse range of in-depth topics, and a broader set of potential activities in, and out of the classroom. The combination of in- and out-of-classroom sessions provided participants with the opportunity to not only improve their level of academic

success, but also their understanding of networking and level of professionalism at an early stage in their academic career.

The content design for out-of-classroom sessions originally varied to some extent between fall and spring semesters, but both focused on learning more about the profession of engineering from a multidisciplinary perspective, the university and its available resources, networking, and relationship building by directly engaging with upper class students, faculty, professionals, and campus resources such as the campus Career Center, the University Center for Academic Excellence, and the Center for Teaching and Learning. The ultimate objectives for incorporating out-of-classroom activities were to help students successfully transition into the university, help them to manage change, enhance their interest and level of engagement in their program of study, and help them begin to develop an academic and professional identity by deepening their connection to the university, college, and peers. During AY 2015-16, all out-of-classroom activities were planned and facilitated by the MAPS program director and coaches.

In fall 2015, the focus remained on academic success strategies, while the plan for the spring 2016 semester was to focus on professional development success strategies to help students prepare for career fairs, internships, and co-ops. This division in themes was driven by the desire to have the same students participate in MAPS during both fall and spring semesters. As such, the fall semester curriculum was comprised of the following academic success-based topics:

- Pace of Study and Effective Time Management
- Workload Assessment and Management
- Note Taking and Learning Skills
- Study and Learning Skills
- Effective Textbook Usage
- Exam Preparation

These topics were touched upon during the fall 2013 and spring 2014 program, but were in need of revision from both a content and activity perspective. The inclusion or expansion of these topics have exposed program participants to a more comprehensive set of skills and abilities, improving the completeness and depth of their understanding related to how engineering students must learn and apply new knowledge and understanding to be successful.

New content for in-classroom sessions developed for the spring semester, focused on professional and career development strategies and topics, which included:

- Global Culture, Diversity, and Etiquette
- Networking and Relationship Building
- Resume and Cover Letter Development
- Career Planning and Development
- Outreach and Motivation
- Team and Leadership Development

Overall, these changes have exposed program participants to a new and unfamiliar set of skills and abilities that have aided in their understanding and execution of their personal and professional development. This new curriculum has attracted a broader group of participants, to include continuing, transfer, and undeclared students who are pursuing a degree from the College of Engineering.

## *II. AY 2016-17*

The development of these conceptual changes in structure and content led to continuous revision of specific details related to curriculum and programmatic structure. These details included the concept or skill, exercise, and application that are taught and demonstrated during sessions. In addition to the use of quantitative metrics based on academic and professional success and retention, participant satisfaction has become a major qualitative metric for program improvement. The program has continued to evolve based on additional stakeholder feedback collected during AY 2015-16, suggesting that the program structure and curriculum lacked certain elements necessary to adequately engage and connect students to available resources, the College of Engineering, and the university as a whole.

It was observed during fall 2015 that a significant percentage of students who registered, either did not attend any coaching sessions or attended only one coaching session. It is now believed that this drop in participation was directly related to participant confusion, and a lack of early-connection established between coaches and participants during the first month of the program. By having program participants attend an in-classroom session one week, followed by an out-of-classroom session the following week, mixed with weeks where there were no sessions due to University holidays, students reported that they were initially very confused as to the location, intent, and structure of the program, leading to a lack of interest and motivation to participate.

In response, the program structure was modified for spring 2016 so that in-classroom sessions occurred on a weekly basis, and out-of-classroom activity attendance became the responsibility of the participants themselves. Based on the requirements of active participation in the program, it became the responsibility of the participants to select a minimum of three out-of-classroom sessions. For out-of-classroom sessions, a list of prospective events or activities was provided to program participants to allow them the opportunity to individually select and plan their attendance. These activities or events were also no longer organized or facilitated by the MAPS director and coaches, but instead were scheduled and facilitated by other UNC Charlotte campus partners, including the campus Career Center, the University Center for Academic Excellence, and the Center for Teaching and Learning. MAPS participants could also request to attend events or activities that were not included on the original list, with the approval of their coaches. After attending each session, participants were then

required to submit a one page memo to their respective coaches to confirm successful completion of the out-of-classroom session.

Several other program enhancements were implemented between the end of fall 2015 and the start of spring 2017 based on MAPS program stakeholder feedback. Such enhancements included, the re-combination of academic success and professional development topics into a single semester curriculum. Based on feedback received by coaches from participants, there was a need and desire for coaches to discuss concepts related to both academic success and professional development during a single semester. As it has become clear that the groups of participants for fall and spring semesters are two fairly unique subsets of engineering students, it made sense to combine both themes into one semester rather than force students to participate in the program during both fall and spring semesters. These enhancements have led to a program curriculum and structure that is again identical for both fall and spring semesters, but which is much more flexible in its delivery and perceived understanding based on the types of program participants involved, and the targeted experiences of the coaches and participants being shared. As such, the current session schedule for AY 2017-18 is as follows:

- What is MAPS? Get to Know Your Coaches and Session-mates
- Effective Time and Workload Management
- Note Taking, Study, and Learning Skills
- Effective Textbook Usage and Exam Preparation
- Self-Directed Learning and Motivation
- Midterm Assessment; Schedule Planning and Registration
- Global Culture, Diversity, and Etiquette
- Resume and Cover Letter Development
- Networking and Relationship Building
- Future Planning and Career Development
- Team Development and Leadership

For more information regarding the current program curriculum, a link to the current MAPS Coaching Program Manual and Curriculum Guide can be found at:

- <http://osds.uncc.edu/maps-program/transition-coaching>

The program manual and curriculum guide will provide you with more in-depth information regarding in-classroom session organization and resources. Finally, detailed in-classroom and out-of-classroom session schedule and structure information can be found through the MAPS Canvas page at:

- <https://uncc.instructure.com/courses/62489>

## **RESULTS AND IMPACT**

### *I. Participation*

The initial implementation of these enhancements to the MAPS coaching program have yielded positive results. The goals or expected outcomes of the MAPS curriculum have been evaluated quantitatively and qualitatively. It was expected that program enhancements would increase participation during both the fall and spring semesters. An initial goal of a 10% increase in new freshmen participation was set for fall 2015. Similarly, a goal of 10% growth in total participation (not just new freshmen) was set for spring 2016. In general, total participation in MAPS coaching has increased 38% from 183 students in fall 2013 to 295 students in fall 2016. It is important to note here that participation in the coaching program is completely voluntary.

The curriculum and program structure from the previous director was last executed during fall 2014 and spring 2015. Between the end of fall 2014 and the end of fall 2016, the percent of *Active Participants* relative to the total number of new freshmen, has increased from (133/459) 28.9% to (196/548) 35.7%. Between the end of spring 2015 and the end of spring 2017, the percent of *Active Participants* relative to the total number of participants has increased from (46/64) 56.8% to (97/124) 78.2%.

Out of the 501 new freshmen enrolled at the time of the fall 2015 census, 183, or 36.5% participated, or attended a minimum of one MAPS coaching session, as compared to (172/472) 36.4% and (161/459) 35.1% in the fall 2013 and 2014 semesters, respectively. Although this initial improvement was marginal at best, continued enhancements to the coaching program based on stakeholder feedback led to a noticeable improvement for fall 2016 with 251/548, or 45.8% of new freshmen participating in MAPS coaching.

In spring 2014, a total of 29 students, 22 of which were College of Engineering students, participated (i.e. attended one or more sessions) in the MAPS coaching program. In spring 2015, a total of 64 students, 25 of which were College of Engineering students, participated in the program. A noticeable improvement was observed in spring 2016 when 99 students, 52 of which were College of Engineering students, participated in the coaching program. Participation increased again in spring 2017 with 124 participants, 63 of which were College of Engineering students.

## II. Academic Performance

Adding to significant improvements in program participation, the semester GPA gap between *Active Participants* and *Non-Participants* increased from 0.47 in fall 2013 to 0.52 in fall 2016. As well, a consistency in academic performance was observed between fall 2013 and fall 2016. For fall 2013, 2014, 2015, and 2016, the average cumulative semester GPAs for College of Engineering new freshmen can be found in Table I.

TABLE I  
FALL SEMESTER MAPS PROGRAM PARTICIPATION GPA COMPARISON

| Fall Semester |                     |     |                       |    |                  |     |
|---------------|---------------------|-----|-----------------------|----|------------------|-----|
| Year          | Active Participants |     | Inactive Participants |    | Non-Participants |     |
|               | Average GPA         | n   | Average GPA           | n  | Average GPA      | n   |
| 2013          | 3.19                | 138 | 2.36                  | 37 | 2.72             | 293 |
| 2014          | 3.09                | 132 | 2.79                  | 33 | 2.66             | 294 |
| 2015          | 3.06                | 117 | 2.38                  | 66 | 2.45             | 318 |
| 2016          | 3.22                | 196 | 2.80                  | 55 | 2.70             | 293 |

Where *Active Participants*, *Inactive Participants*, and *Non-Participants* represent those students who during the semester, have attended seven or more coaching sessions, between one and six coaching sessions, or zero coaching sessions, respectively.

While the fall 2013 to fall 2016 academic performance for active MAPS program participants showed steady improvement as participation has grown, a more complex relationship has been identified for the spring 2014 to spring 2017 semesters. As can be seen in Table II, the average GPA for actively participating College of Engineering students showed improvement from spring 2014 to spring 2016, but then dropped for spring 2017. Considering the general variance in student type for spring semester program participants, it is not inconceivable that a single semester drop in the average GPA for *Active Participants* could occur. This variance can be seen in the unique nature of each of the following student types that are apparent during the spring semester:

- Engineering students who did not do well during the first semester of their freshman year.
- Engineering students who entered their respective program at a lower math readiness level, which delayed their taking either the *Introduction to Engineering* course, where MAPS is heavily promoted.
- Engineering students who did not recognize the opportunity in MAPS during their first semester.
- Engineering students whose first semester at UNC Charlotte was the spring semester, either as a transfer student, or a new freshman.

As the 2017 data is new, further analysis regarding the underlying nature of its character is ongoing.

TABLE II  
SPRING SEMESTER MAPS PROGRAM PARTICIPATION GPA COMPARISON  
FOR COLLEGE OF ENGINEERING STUDENTS

| Spring Semester |                     |    |                       |    |                  |    |
|-----------------|---------------------|----|-----------------------|----|------------------|----|
| Year            | Active Participants |    | Inactive Participants |    | Non-Participants |    |
|                 | Average GPA         | n  | Average GPA           | n  | Average GPA      | n  |
| 2014            | 2.72                | 19 | 2.63                  | 8  | NA               | 0  |
| 2015            | 2.89                | 21 | 1.91                  | 4  | 2.74             | 9  |
| 2016            | 3.00                | 39 | 2.15                  | 13 | 1.96             | 7  |
| 2017            | 2.69                | 48 | 2.49                  | 11 | 2.45             | 15 |

For spring 2015, 2016, and 2017, the timespan over which comparative data is available, the average cumulative semester GPA for non-engineering students, continuously increases, as seen in Table III.

TABLE III

SPRING SEMESTER MAPS PROGRAM PARTICIPATION GPA COMPARISON  
FOR NON-COLLEGE OF ENGINEERING STUDENTS

| Spring Semester |                     |    |                       |    |                  |    |
|-----------------|---------------------|----|-----------------------|----|------------------|----|
| Year            | Active Participants |    | Inactive Participants |    | Non-Participants |    |
|                 | Average GPA         | n  | Average GPA           | n  | Average GPA      | n  |
| 2015            | 2.91                | 25 | 2.79                  | 14 | 2.71             | 8  |
| 2016            | 3.01                | 34 | 2.66                  | 13 | 2.95             | 15 |
| 2017            | 3.05                | 49 | 2.92                  | 14 | 2.83             | 8  |

### III. Retention

The fall 2015 to fall 2016 College of Engineering one-year retention rate for *Active Participants* was 88%, as compared to 65% for *Non-Participants*. As is evident in Table IV, those students who actively participate in the coaching program are retained within the college to a much greater extent than those who are either inactive, or do not participate at all. What is also clear based on the data below is that the relative rate of retention seems to be improving from one year to the next.

TABLE IV  
ONE-YEAR RETENTION FOR NEW FRESHMEN IN THE COLLEGE OF  
ENGINEERING

| MAPS Transition Coaching COE New Freshman 1-Year Retention |                     |              |                        |              |                  |              |            |              |
|--|---------------------|--------------|------------------------|--------------|------------------|--------------|------------|--------------|
| Semseter   | Active Participants |              | In-Active Participants |              | Non-Participants |              | All COE NF |              |
|  |                     |              |                        |              |                  |              |            |              |
|  | n                   | % Ret in COE | n                      | % Ret in COE | n                | % Ret in COE | n          | % Ret in COE |
| F13  | 138                 | 82.6%        | 38                     | 44.7%        | 296              | 64.2%        | 472        | 68.0%        |
| F14  | 132                 | 77.2%        | 33                     | 51.5%        | 294              | 63.6%        | 459        | 66.6%        |
| F15  | 117                 | 88.0%        | 66                     | 62.1%        | 318              | 64.7%        | 501        | 69.8%        |

Historically, approximately two-thirds of all College of Engineering new freshmen are retained after one year. This suggests that students who actively participate in MAPS coaching are retained at higher rates than the general freshman population. The increase in retention for *Active Participants* is believed to be directly related to the level of connection that a student develops during their first year in college. One of the primary goals for MAPS coaches is to help in facilitating that connection between the new engineering students and the university, the college, campus resources and organizations, and their peers. It is also believed that the steady increase in retention from one year to the next is also the result of efforts to continuously improve the program based on stakeholder feedback.

### IV. Participant Satisfaction

Recent and future enhancements to this program are primarily based on the feedback from program coaches and participants. The program has received both positive and negative feedback, based primarily on the background of the participant, and the experience they encounter through participation in the program. This is evident based on MAPS participant testimonials available at:

First Year Engineering Experience (FYEE) Conference

- <http://osds.uncc.edu/maps-program/transition-coaching>

### CONCLUSION: LIMITATIONS AND FUTURE PLANS

With the goal of developing a more well-rounded and robust program, a future review of literature will be conducted to better assess the overall performance of the MAPS program. Comparisons of our methods and results to those of other similar transition-based programs will be made. In doing so, we expect there to be great potential for gaining new insight into future programmatic developments.

The MAPS coaching curriculum and program structure has undergone significant changes under the auspices of the new program director. These changes include full revisions of weekly sessions and their topics, implementation of out-of-classroom activities, an updated coach training plan, and a more effective coach-director meeting structure. Enhancements will continue to be implemented to expand the first year experience for engineering students, and to provide them with the knowledge, skills, and understanding to be successful in their academic and professional careers. To measure the progress and effectiveness of the new curriculum and program structure, participant's retention rates, academic performance, and demographics have been, and are being monitored and assessed on a mid-term and semester basis. Additionally, the feedback from participant-to-coach, coach-to-director, and director-to-faculty have provided a qualitative measure of success for the coaching program.

Based on these indicators, continuous process and service improvements have allowed several enhancements, one of which is the addition of a new "Self-Directed Learning" coaching session, developed in collaboration with the University Library. Going forward, changes to the program will continue to be based on the needs and interests of student participants, with the expectation that the program will continue to enrich and enhance their academic and professional experience. In addition to longer term goals related to improving retention and academic performance of engineering students, the MAPS program, in collaboration with the College of Engineering's *Engage ME! (Engage Multicultural Engineering!)* initiative, is currently developing strategies to increase the number and diversity of program participants and coaches.

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