NSF

POLK STATE COLLEGE

UNIVERSITY of SOUTH FLORIDA
College of Engineering

Enhancing Engineering Education through Learning Team

TURNPIKE

Transfer Undergraduate Rural/Nontraditional Student Pathways through Identity, Knowledge & Engagement

Goal & Rationale

The TURNPIKE project is a transfer student pathway program funded by the National Science Foundation.

- Collaboration between Polk State College (PSC) and the University of South Florida (USF) College of Engineering (CoE).

- PSC students are low-income, first-generation-in-college, and part-time.

Goal

- To create a successful bridge from associate to baccalaureate degree completion through curricular, co-curricular, social, and financial interventions for academically talented transfer students with unmet financial need to the University of South Florida.

Rationale

- TURNPIKE addresses the critical need for a STEM workforce identified by industry partners and supported by workforce data.

- Academic & social acclimatization of high achieving students with unmet financial need

Team and Key Partners

- Sanjukta Bhanja, PI: Interim Dean of College of Engineering, Professor of Electrical Engineering and AD; co-founder of Engineering Grand Challenges Scholars Program GCSP@USF.
- Maile Sinclair-Baxter –Academic Advisor for SSTEM
- Mary Goodwin, Co-PI: Director of Engineering Student Service, USF
- Will Tyson, Co-PI: Associate Professor and Researcher, Sociology, USF
- Souheil Zekri, Sr. P: CoE Med Eng faculty, GCSP mentor and design faculty, USF
- Kavita Mittapalli , MN Associates, Inc. (MNA). - Project Evaluation for TURNPIKE

Key partners:

- Office of Financial Aid, Engineering Student Services, Engineering Academic Success Center, Admissions office, and Transfer Student Success.

Scholarship Information

❖ **Amount:**

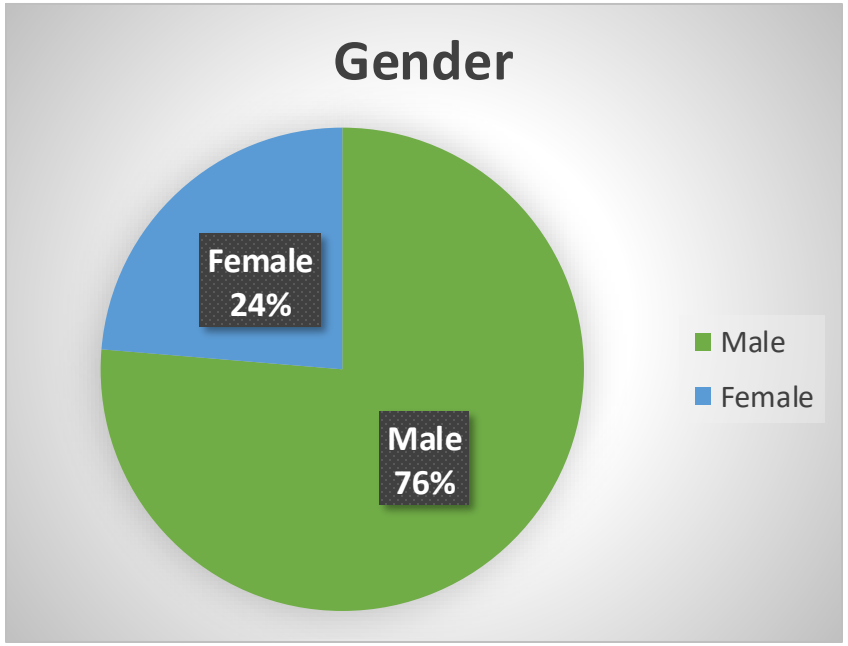
•Students may receive up to **$10,000 /year** depending on unmet financial need**.**

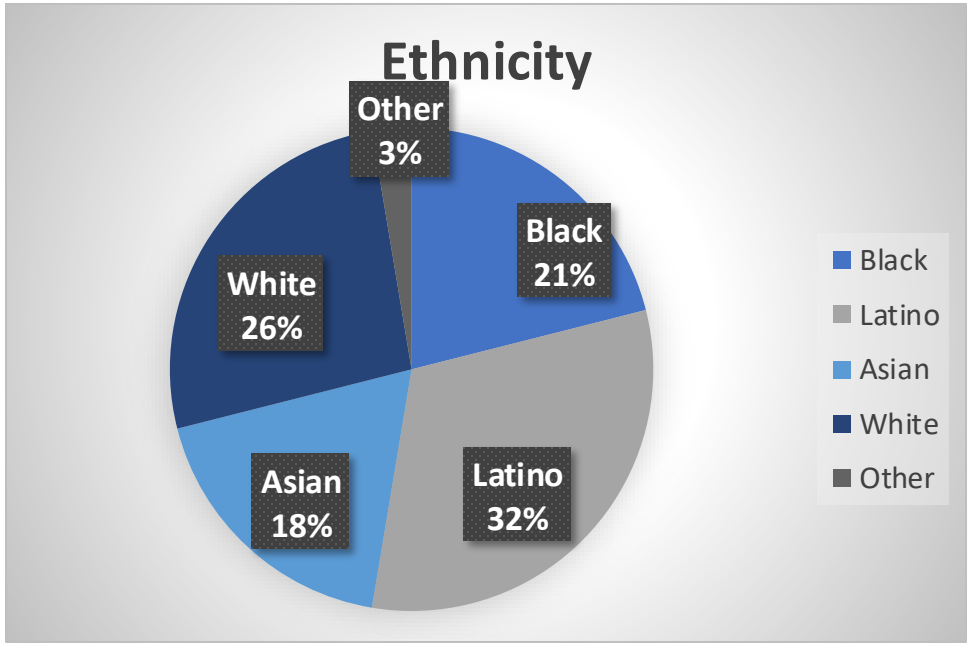
•If the unmet financial need per year is less than **$10,000**, then the scholarship will match the unmet financial need.

❖ **Duration:**

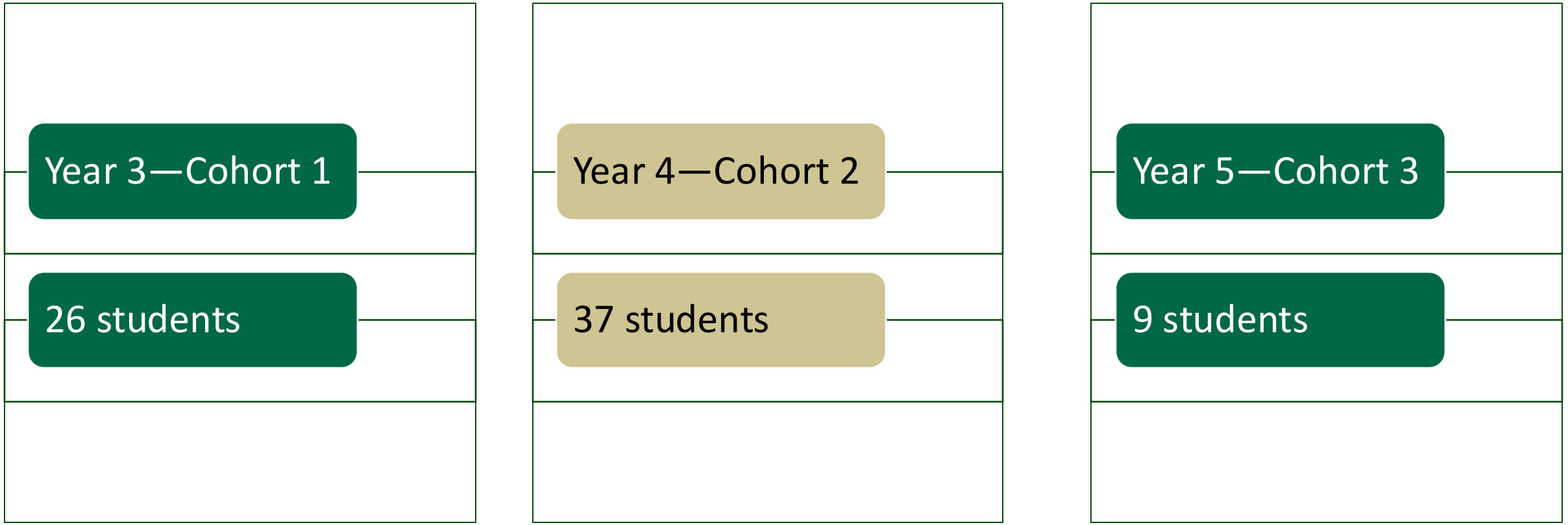
•Two (2) years with a renewal process at the end of each year based on the student's academic standing

Polk State Cohort Demographic



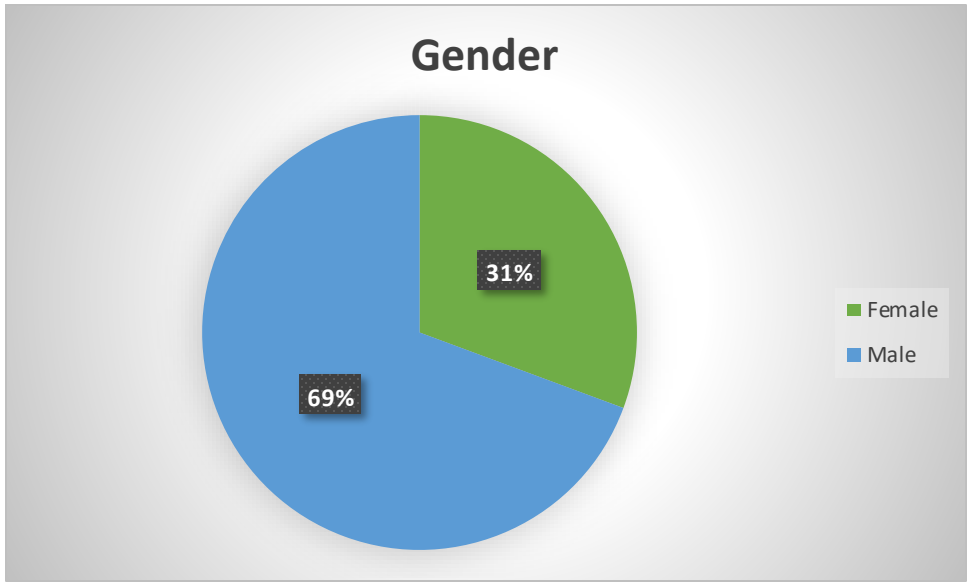


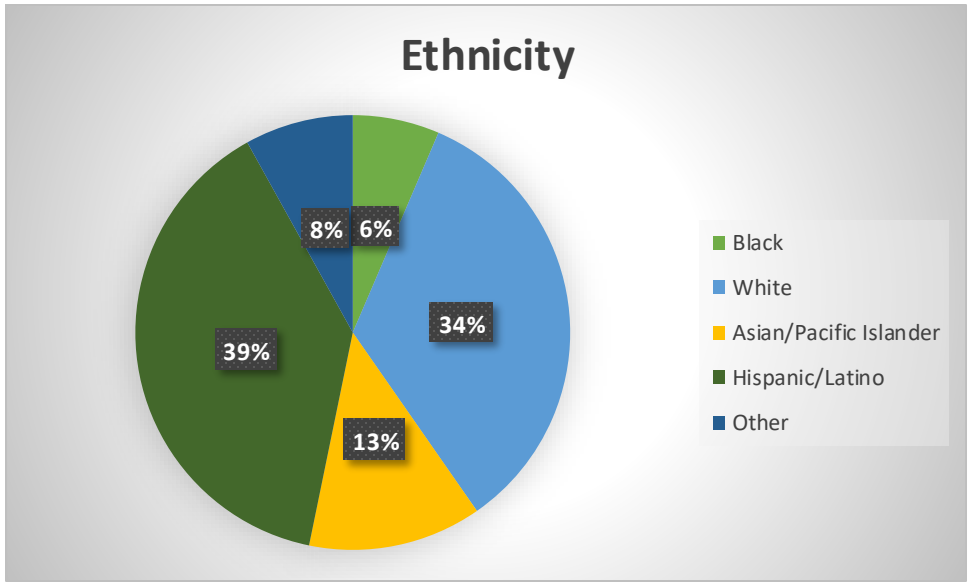
USF Cohort


Year 3—Cohort 1
26 students
Year 4—Cohort 2
37 students
Year 5—Cohort 3
9 students

USF Cohort Demographic

One of the highlights of our university is diversity. Our students all come from different race and ethnicity, country of origin, socioeconomic status, sexual identity, age, among other considerations.





USF Cohort

Two-Year Institution (AA Degree Provider)	Number of Students
Polk State College	17
Hillsborough Community College	**28**
Indian River State College	1
Pasco Hernando- CC	4
Santa Fe College	1
St. Pete College	7
State College of Florida, Manatee-Sarasota	9

Degree Pursuing	Number of students
Mechanical Engineering	10
Chemical Engineering	4
Civil Engineering	5
Computer Engineering	4
Computer Science	**17**
Cybersecurity	10
Information Technology	6
Industrial Engineering	2
Electrical Engineering	11
Environmental Engineering	2

Key Program Components

- **Peer-led Content-driven Learning Communities (learning teams)**
  - To enhance academic success, engineering identity, and social integration from rural to urban macro system.

- **Proactive Advising and Mentorship in USF**
  - Ensure student success.

- **Targeted Career Competency/Professional Development Training**
  - And enhanced networking opportunities will be part of the TURNPIKE project. Scholars will participate in engineering related workshops, hackathons, STEM conferences, and other STEM activities. Travel awards will be allocated to distinguished students.

Learning Communities (Learning Teams)

Purpose:

- Provide to the students academic and social support immediately.
- Encourage the students to integrate to curricular related activities and avoid isolation.
- Develop academic and social habits.
- Alleviate the transition and cultural shock for transfer students by helping them acclimate to the university and the courses.
- Retention of non-traditional engineering transfer students.

History of LTM in the College of Engineering

- In 2012, the College of Engineering created course-based learning teams (LTM) centered on first year math courses such as Pre-calculus, Calculus I, or Calculus II.
- These LTMs courses were linked to a specific math section. This was a zero credit course.
- The size of the course-based learning teams ranged from 10 to 20 students.
- Offered to first year student (freshman).
- By 2014, two more sections of LTMs were offered for Chemistry.

LTM at Polk State College

Model 1:

- Training for the set up was provided by Dr. Mary Goodwin, Director of Engineering Student Services.

- Led by one peer mentor, a successful student who completed his AA program from Polk State College and pursued an engineering degree at University of Florida.

- Weekly peer mentor meetings with a tutor is once or twice a week, but the peer mentor is available throughout the week if students need 1-on-1 assistance.

- Meetings consist of a weekly checkup on our students, tutoring and a safe space for the students to socialize and build a community.

LTM Model 1 at Polk State College

Rationale for Model 1

- ❖Most pre-engineering courses (math and sciences courses) are the same in community colleges.
- ❖The peer-mentor was an expert in all the difficult courses and was able to tutor for all of them.
- ❖ The peer mentor was a student of the co-PIs.
- ❖The peer mentor was a confident supporter of the students learning.
- ❖Peer mentor could allocate ~20 hours of tutoring/week to assist multiple students in a group setting.
- ❖Group or 1-1 sessions.

LTM at USF

Model 2:

- Social Study Group sessions with a peer mentor.
- Minimum study hours are one hour/week.
- Monthly hourly logs are submitted via Canvas course.

LTM at USF- Key Partner

- Leverage College of Engineering (CoE)’s peer mentor and tutoring program.
- From this program, we select the peer mentors that have taken and successfully completed the same courses that the scholars will be taking that specific semester.

Peer Mentor Training and Setup at USF

- USF College of Engineering has invested an extensive pool of peer mentors and tutors.
- Extensive training provided by Dr. Mary Goodwin (co-PI).
- Trainings are conducted in person in a group setting and online, where a training manual is provided.
- The lead tutor in the Academic Success Center reviews key concepts with the tutors as well as online material available for them to use.

Establishing LTM at USF

The process below is conducted every semester:

- The semester prior an assignment is created for the scholars to complete to enter the courses they will be taking.

- Identify the most common courses overlapping that the scholars are taking.

  -two or more students enrolled in the same course

- Make sure each scholar are part of at least one LTMs linked to difficult courses.

Establishing LTM at USF

- Identify peer mentors and tutors and the times they are available to work.
- Contact the scholars to find common times among them that match the peer mentors/tutors' schedule.
- Reserve the weekly study session time and rooms.

Establishing LTM at USF

Common Classes					
Tutor 1	EGN 3321		EML 4106C	Tutor 3	Mondays; 5-6 PM
Thursdays; 3:30-4:30 PM	1		1		
	2		2		
	3		3		
Tutor 2	EGN 3420		COP 4530	Tutor 4	Fidays- 9:3010:30 AM
Thursdays; 2-3 PM	1		1		
	2		2		
			3		
			4		
Tutor 5	EGN 3433		COT 4210	Tutor 6	Tuesdays- 9:3010:30 AM
Mondays; 3-3:45 PM	1		1		
	2		2		
			3		

Responsibilities of the Scholars- LTM

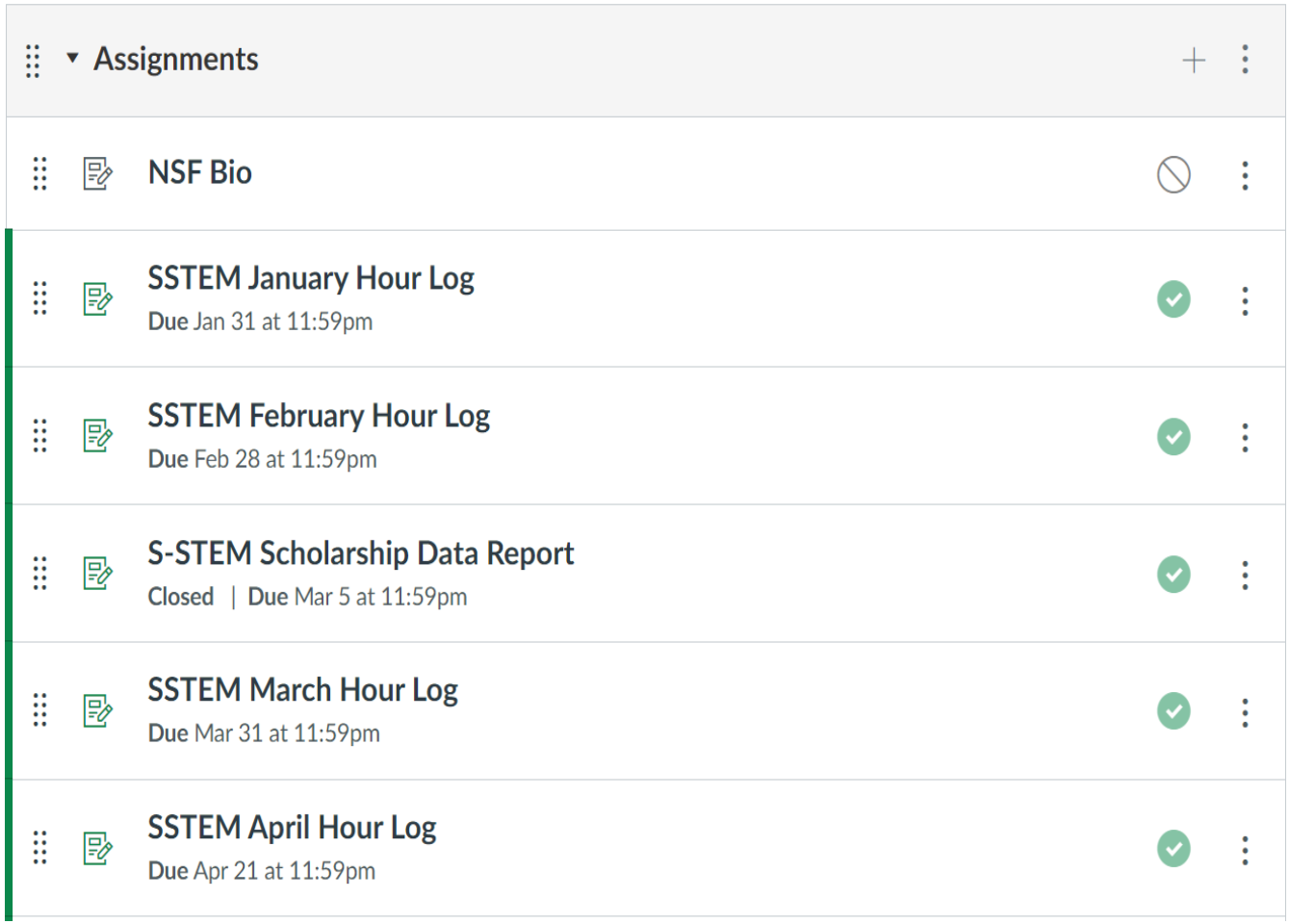
- Attend the study session at least an hour per week.
- Complete the Hour Log form.

  -Scholars are asked to include pictures on the form
- Monthly Hour Log form are to be submitted via Professional & Development Canvas course .

HOUR LOG

Student Name: _____ 

DATE	ACTIVITY	Start Time	End Time	# OF HOURS
03/01/23	Thermodynamics Homework	3:30pm	4:30pm	1
03/07/23	Thermodynamics Test and Homework prep	2:00 pm	4:00pm	2
03/21/23	Numerical Methods Homework	3:30 pm	5:00pm	1.5
03/23/23	Numerical Methods Homework	4:00pm	5:30pm	1.5
03/27/23	Thermodynamics Homework	2:00 pm	4:00 pm	2
03/29/23	Thermodynamics Homework	1:30 pm	4:00 pm	2.5



LTM Model 2 at USF

Rationale for Model 2

- ❖Course-based learning team –commuting students not in a residence hall.
- ❖Different engineering majors/disciplines among schholars mean different junior level courses.
- ❖Multiple peer mentors from different disciplines.
- ❖Peer mentors allocate less than 5 hours per week.

LTM- Opportunities/Challenges Model 1

Opportunities:

- ❖Having a peer mentor with similar background and wen through the same pathway as the scholars.
- ❖Peer mentor that could tutor in all the subjects.
- ❖Scholars who attended the study sessions were successful is classes.

Testimony: “The learning team sessions conducted by [AA] is the best! He is a lifesaver”

LTM- Opportunities/Challenges Model 1

Challenges:

- ❖Many scholars work full-time and the tutoring sessions are not well-attended.
- ❖No reward mechanism to participate.
- ❖Institution has many campuses, and no physical locations were available.

LTM- Opportunities/Challenges Model 2

Opportunities:

- ❖Scholars saw value in Community-based Learning.
- ❖Encouraged academic collaboration for among scholars

  -helping and tutoring each other even for courses where tutors could not be found.
- ❖Multi-level Mentoring through connection of scholar with a PhD student (Bridge to the Doctorate program (BD))
- ❖One campus for the engineering program.
- ❖Advisor and scholar connection is phenomenal.
- ❖Transfer Student Adviser is also S-STEM advisor.

Scholar’s Testimonial at USF

Interviews and Focus Groups project led by Will Tyson, Co-PI: Associate Professor and Researcher, Sociology, USF

"I've joined study groups because of it, so it's helped me academically."

"Knowing we’re all in the same boat and that we’re going to get through it together has been incredibly motivating."

"The program pushing [tutoring], making it a little bit more required, is getting students together to actually study and get better grades."

LTM- Opportunities/Challenges Model 2

Challenges:

- Finding trained and confident peer mentors for all different courses.
- Focus on tutoring for upper-level courses.
- Peer mentors not having a large time available to commit to tutoring throughout the week.
  -We had to invest in a group of tutors each with 5 hours available to allocate.

External Evaluation Results on LTM

Year 3 Findings conducted by Kavita Mittapalli , MN Associates, Inc. (MNA).

(Mean score=5) (n=48)

LTEM	Polk State College	USF	Overall	Category
I am satisfied with my academic performance so far and feel prepared for a career	3.88	**3.95**	3.91	Academic preparation
I seek help outside of my class(es)	3.75	**4.25**	3.99	Support services-academic
Peer mentoring is adequate at my institution	**4.27**	4.08	4.20	Support services-academic

Path Ahead and Planning

Constraint:

- Due to Covid, we could not use part of the scholarship's spending on investing on more peer mentors/tutors for upper level courses.

Opportunity:

- We will be meeting all the scholarship goals thus the we will be in the position of investing and training peer mentors that can tutor upper level courses.
- Develop and expand the Multi-level Mentoring between scholars and BD students across multiple disciplines.

Question and Answer