STOCKTON UNIVERSITY
ANNUAL REPORT FOR
2020 INITIATIVES PROJECT

PROJECT LEADER(S):	Peter Straub, Tara Luke, Norma Boakes, Pam Cohn, Jason Shulman, Melissa Zwick
PROJECT TITLE:	Student Spaceflight Experiments Program Learning Community
DATE:	7/26/2017
CC:	

- *The boxes below expand as needed to accommodate your notes. You may also include/submit appendices or attachments, if needed.*
- *Email a copy of this completed form to Jessica Kay, Data Analyst & Assistant to the Chief Planning Officer at:* ***jessica.kay@stockton.edu***

Please provide a summary of the project and your experience.

This project provides an authentic research competition to undergraduate students with the goal of generating enthusiasm for students in Science, Technology, Engineering and Mathematics (STEM) disciplines. Students engaged in experimental design and testing with small groups and faculty mentors to advance microgravity research proposals through a two-stage review process to select a winning experiment that will be tested on the International Space Station. The experiment is currently loaded for an early August launch to the International Space Station on SpaceX CRS-12. Students will participate in analyzing the experiment on return to earth and presenting results.

Please attach a copy of your original proposal or list your stated objectives and expected outcomes.

Learning: Primary- Deliver high value-added learning experiences and promote scholarly activity (S1).
Secondary- Strengthen internal processes to support learning (IP1-L).
Secondary- Develop faculty and staff skills to support learning (ER1-L).

Engagement: Secondary- Foster an interactive environment among students, faculty, staff and community (ER3).
Expected outcomes: Increase student enthusiasm for STEM and undergraduate research. Increase community awareness of space science.

See Attached proposal

Please describe the results of your project and compare them to your original expectations. Elaborate on how well your objectives were met and how they might have changed. Note any particular obstacles that may have prevented your achieving full satisfaction on desired outcomes.

The project has been very successful to date and has additionally been supported by the Stockton STEM Collaborative and the School of Natural Sciences and Mathematics. The instructors led 26 students in the GNM 2800 Student Spaceflight Experiments independent study course in fall 2016. These students produced 11 collaborative student proposals to study physical, biological and chemical systems in microgravity conditions. A review panel of Stockton Professors rated and picked the three semi-finalist proposals. These were forwarded to the national SSEP review panel where one proposal "Spores in Space: The Effects of Microgravity on Endomycorrhizae," was selected for flight to the International Space Station (ISS). Five students worked on the conditions to optimize and prepare the final parameters for flight approval over the spring 2017 semester. During this period, Dr. Melissa Zwick administered assessment instruments to gauge student enthusiasm and participation in the project. She is currently analyzing the data. In concert with the science competition, the group sponsored a mission patch art competition which engaged the K-12 and university communities in a design competition. Over 200 designs were submitted. One university and one K-12 partner designs were selected and will fly to the ISS with the experiment. Dr. Norma Boakes oversaw relationships with the K-12 partner schools which includes schools in Toms River, Atlantic City, Mays Landing and Galloway Township. Our local SSEP community had the opportunity to attend the 2017 National Student Spaceflight Experiments Program conference at the Smithsonian Institute's Air and Space Museum in June 2017. As our initial plan was to be attending our launch (which was delayed until August 2017), we took the opportunity to use our dedicated FY17 travel funds for this conference. Two students presented the flight experiment (pre-launch) data to the SSEP community and in poster format to the general public at the museum. The students did an excellent job.

The launch date for the experiment to the ISS is currently August 13th and a team of 5 students and 3 faculty are planning to attend the launch activities which will be held at the Kennedy Space Complex Visitors Center. As part of the activities, students will present their work in poster form to the public at Visitors Center, tour the NASA facilities and view the launch.

Given the success of the project in engaging students in the creative process of scientific research, the proposal team decided to apply for Mission 12 of the Student Spaceflight Experiments Program and was accepted. The team felt that the experience was of high value and demonstrated the use of a high impact learning strategy. Part of the 2020 project FY18 awarded funds will be invested in continuing the project into Mission 12 as well as supporting the goals of Mission 11 which will be to attend the launch and to support student post-flight analysis of the "Spores in Space" experiment which will return to earth from the ISS in mid-September 2017 for laboratory analysis at Stockton.

Please list any follow-up actions (publications, presentation venues, etc.)

1) A Stockton student team presented a poster "Spores in Space" at the annual NAMS Science Symposium in May 2017.

2) A Stockton team attended the 2017 Student Spaceflight Experiments Program National Conference and two students presented their work in an oral and poster format. The conference venue was the Smithsonian National Air and Space Museum in Washington, D.C., June 28-29th, 2017. The students, Valkyrie Falciani and Danielle Ertz presented "Spores in Space", which detailed their proposal and preliminary data leading to the experiment which will be performed

on the International Space Station in August 2017. Pam Cohn, Tara Luke, Norma Boakes and Peter Straub attended as well.

3) Social media was used to engage the Stockton community through a takeover of the Stockton Snapchat feed and a Facebook live coverage of the SSEP National conference activities that was undertaken by the SSEP students. Snapchat on YouTube: https://www.youtube.com/watch?v=FnpyCoBPR_c&index=120&list=PLq3J_zhDNwnm7YHGoy8y2Fv3WzR5AY3-W

4) Stockton news releases:
https://intraweb.stockton.edu/eyos/extaffairs/content/docs/pressrel/StocktonSSEPWinner2016PressRelease.pdf
https://stockton.edu/news/space-mission11-2016-news.html

5) Press coverage:
Space spores: Stockton students experiment headed to space station. The Press of Atlantic City (1/30/17) http://www.pressofatlanticcity.com/education/space-spores-stockton-students-experiment-heading-to-space-station/article_1fa3ec35-321e-5e77-8450-6af887c951df.html

Space Is The Final Frontier For These Stockton University Students- Ocean City Patch (12/25/16): https://patch.com/new-jersey/oceancity/space-final-frontier-these-stockton-university-students

6) The Student Spaceflight Experiments Program was featured in summer 2017- Stockton Now: The Official Stockton University E-zine. *Out of this World Experience*.

7) Comcast Newsmakers- Dr. Jason Shulman on Mission 11 of the Stockton SSEP project: http://comcastnewsmakers.com/2016/12/15/nj161214-8/

8) A website was created for the project: Stockton Student Spaceflight Experiments Project: https://stocktonspaceflight.org/

9) An Elevate Stockton informational and fundraising campaign for the Student Spaceflight Experiments Program was undertaken to raise additional money for program expenses. The campaign raised $1745 from 21 donors and continues to inform the donors on the progress of the project. A similar campaign will be run in the next year.

10) One follow-up action was Dr. Straub met with Dr. Daniel Serrano, director of the University of Maryland SSEP at the national conference and discussed a potential collaborative assessment of our projects to be proposed to the National Science Foundation, Division of Undergraduate Education.

11) Another follow-up action was that Dr. Straub contacted the New Jersey Space Grant Consortium (NJSGC) and was invited to attend their annual affiliate meeting and student poster presentation event at Rutgers in New Brunswick on April 28, 2017. Stockton is seeking affiliation with the NJSGC which will provide opportunities for Stockton students to compete for fellowships and internships funded through NASA.

12) A third follow-up action was that the team applied for and was granted a place on the upcoming SSEP Mission 12 which will begin September 1. 2017. Implementation will follow the general plan for Mission 11 with a fall class, proposal generation and review and a spring/summer launch

of the winning experimental design to the International Space Station. Given resources, students will be able to participate in the competition and again attend the National conference and the launch program.

13) Another follow-up activity is that Dr. Norma Boakes has been invited to attend a fall 2017 Toms River school board meeting to honor the student and teacher of the winning mission patch K-12 design competition. The student and teacher will be involved in an on campus event to present the mounted mission patch on a commemorative plaque after it returns from the International Space Station. Additionally, a short video will be produced by SSEP students to highlight Mission 11 for the K-12 partners.

Are you recommending the continuation of this project? If so:

- **What are the next action steps you foresee or recommend?**
- **What are the expected budget requirements going forward?**
- **Please identify the program, department, or division to which the continuation proposal should be forwarded.**

[Note: continuation proposals must be approved and incorporated into the appropriate budget process.]

We are recommending continuation of this project into its second year. Travel funds will be used to offset the cost of sending a student group to Cape Canaveral, FL for the launch of their experiment. Program funds will be used to offset the cost of continuing the program into Mission 12. Currently, the second year funds allocated to the project will cover ¼ of the flight costs and approximately 1/6 of the conference/launch activities for the students.

FINANCES: Based on your proposal, please outline below how the award has been spent.

	Amount	**Notes/Comments**
Beginning Budget Balance as of: 7/1/2016	**$ 10000**	
Salary Expenditures		
• Stipends	$	
• Full-time staff salaries	$	
• Full-time faculty salaries	$	
• TES salaries	$	
• Fringe Benefits	$	
Total Salary and Fringe Expenditures	$	
Non-Salary Expenditures *(supplies, travel, etc.)*		
•	$ 3000	Travel to SSEP National Conference
•	$	
•	$	
•	$	
•	$	
•	$	
Total Non-Salary Expenditures	$	

Total Salary + Non-Salary Expenditures	**$ 3000**	
Ending Budget Balance as of: 6/30/2017	**$ 7000**	

If there are remaining expenditures required to complete the project, please itemize them with expected amounts and timing for payment.

IMPORTANT: ***Unused funds will revert to the general 2020 Initiative Fund at the end of the fiscal year if not approved and encumbered for project costs.***

Item	Expected Amount	Expected Timing for Payment
Travel (FY18)	1000	April 2018
Program support ¼ cost SSEP-(FY18)	6000	October 2017
Total	7000	