

STEM Student Scholars Program (3SP)

(revised 1/11/2017, 3/10/2017, 3/30/2017, 3/31/2017)

Background and Need:

The overwhelming success of student and faculty involvement in the faculty mentored student research projects of the student club, the STEM Student Union, has revealed the need to formalize a program that would allow for expansion as well as providing for a more uniform process of ensuring student achievement in acquiring the necessary knowledge, skills and ability to perform undergraduate research.

Also, a number of deficiencies in STEM courses at Bergen Community College have been identified by STEM student alumni reporting back about their experiences after transferring to their target 4-year college.

Also, based on feedback from faculty members currently engaged in mentoring student projects, there is a need for faculty to better coordinate their efforts and to share their experiences and improve their participation in meetings and events of the STEM Student Union.

Purpose:

The STEM Student Scholars Program shall promote excellence in knowledge, skills and ability of a select group of STEM students to ensure their success in securing research internships and successful transfer to their targeted 4-year institution.

Student Benefits:

Students who successfully complete the program shall have their achievement recorded on their official transcript.

Students who successfully participate in the program shall have an opportunity in their second summer in the program to participate in an internship off campus in their target 4-year college or industry.

Requirements for Admission:

Shall be open to all students of Bergen community college who have declared a STEM major and who have a predetermined minimum cumulative GPA (to be determined on a semester by semester basis) at the completion of their first semester at Bergen Community College, have finished all remediation courses and have earned at least 12 college level credits at BCC.

Overseeing

The program will be administered by a paid program coordinator working in conjunction with a team (cadre) of faculty research mentors who shall meet on a monthly basis for the following purposes:

- to review admission applications into the program
- to review the progress of individual students in the program and decide on censure and/or removal of students

- to ensure that research internships on-campus are secured in the first summer of the students membership in the program
- to ensure that research internships at a 4-year college or industry are secured in the second summer

All faculty involved in mentoring research projects as part of the program must participate in these monthly meetings.

Program Elements:

In addition to the standard requirements of maintaining their GPA, students in this program will be required to complete all three of the following:

1) Academic Elements

To enhance their knowledge and skills beyond what is currently offered in the STEM curriculum at Bergen Community College, formal mini-courses/workshops shall be offered on various STEM topics. Instructors for workshops shall be compensated. Some workshops shall occur on weekends and over several weeks. Workshops shall be ongoing and repeating and shall be open to students and faculty outside the program as well.

Workshop topics shall include (but not be limited to):

Software:

- SOLIDWORKS
- PTC Creo
- LabVIEW
- MATLAB and SIMULINK

Equipment Use and Instrumentation:

- 3-D Printing
- Machining (including basic tool use, welding and plasma cutting)

Communication and Writing:

- Speech Coaching
- Project Planning and Budgeting
- Writing a Business Plan
- Technical Writing in the CSE format

Students of the program must complete one workshop topic from each of the above categories.

2) Research Elements

To enhance their abilities, by applying their knowledge and skills, students in this program shall be required to participate in an on-campus faculty mentored project in their first summer of the program.

Students in this program shall be required to participate in an off-campus faculty mentored project in their second summer of the program.

In addition to being an active member of the research project team, additional requirements determined collectively by the 3SP faculty mentors could include:

- The student shall become a contributing member of the STEM Student Union
- The student shall co-author with team members CSE formatted reports documenting their project at the end of Summer 1 and at the end of Summer 2
- The student shall co-author a professional quality poster which showcases the project and shall submit it for presentation at the annual STEM C² Research Summit at Bergen Community College usually held in April
- The student shall co-author a professional quality poster which showcases the project and shall submit it for presentation at the annual Beacon conference
- Present a talk at the annual STEM Student Union Reunion Conference in the fall
- The student shall co-author and submit an article for publication in the student Torch student newspaper detailing the project
- The student shall contribute a minimum of 2 hours per week working on the project during the semester in the STEM Student Laboratory

3) Service Elements

- To help improve the prospects of success of STEM students who are in remediation courses, STEM Student Scholars shall serve as a mentor to a single MAT-048 or MAT-160 student. This includes one-hour regular weekly mentoring sessions
- To help encourage students (pre-college or undecided majors) in the larger community to pursue STEM careers, STEM Student Scholars shall be required to present at one off-campus science fair or conduct a STEM demonstration/workshop session at an educational institution in the area