

**Freshman S-STEM Scholars Program Description
For
Biomedical, Chemical and Environmental Engineering Ethnic Minority Students**

Students selected to participate as Freshman S-STEM Scholars will be required to participate in the following seven programs during the Fall 2014 and Spring 2015 semesters. The selected students will sign a contract to complete all program requirements and document their participation in an **E-Portfolio**, customized for each student.

1. **S-STEM Mentoring and Tracking Program:** Faculty/professionals-student interactions outside the classroom positively affect retention. These interactions provide opportunities for building community and capacity through academic/social networks. The S-STEM Mentoring and Tracking Program is structured with this in mind. An academic undergraduate degree *Program Advisor* is identified for each Freshman S-STEM Scholar, and each S-STEM scholar must meet with their advisor during the pre-advising week (7th week of the semester) to discuss progress towards their degree and to plan their course schedule. Each advisor completes an *Academic Progress Report Form* for the student's records. Additionally, each Freshman S-STEM Scholar is assigned a *S-STEM Mentor* who monitors the student's participation in the S-STEM program activities outlined in this document as well as successful academic progress in the college. Students meet their S-STEM Mentor at least once every semester and must submit one progress report signed by the mentor. They must also submit at least two course progress reports from the instructor for each course taken during the freshman year. In the first freshman semester, the Freshman S-STEM Scholar will submit a reflective essay documenting their professional career aspirations and the relationship of their aspirations to the college education they plan to pursue. The S-STEM Mentor meetings facilitate discussion concerning instructor reports, course work, completion of special S-STEM freshman-year program requirements, applying for a specific S-STEM program degree track in the 2015 Spring Semester, and personal and academic concerns. S-STEM Mentors can make recommendations for students to help the students improve their grades, meet S-STEM program obligations, or apply to continue in the S-STEM program. The S-STEM Mentor learns the short- and long-term goals of their student advisees through their freshman reflective essay. Once those goals are known, the S-STEM Mentor can steer students to appropriate information or resources that may help student achieve their goals. The S-STEM Mentors can also connect their advisee to faculty who have professional, research, or service interests compatible with the student's interests. The STEP Mentor documents these recommendations in a *Student Consultation Form* during the semester meeting. All of the above documentation is uploaded to the student's E-Portfolio. The main purpose of the E-Portfolio for the students is to serve as a tool to track their participation online and provide access to documentation for use at any time for interviews, applications to graduate school or any other use. Additionally, the S-STEM Mentors can use the E-Portfolio to review student progress prior to meeting with the students. Note: All E3 students are required to submit and upload in the E-Portfolio the Academic Progress Report from the academic undergraduate degree Program Advisor and the course progress reports from the instructors as part of E3 Program, which will suffice.
2. **Orientation:** The Freshman S-STEM Scholars will attend an orientation session that highlights the goals, objectives, and expectations of the S-STEM program, particularly the freshman program requirements. The orientation will be held at the beginning of fall semester, prior to the start of the program. Students will submit their signed contract for participation. The orientation will also include a training program for the use of the E-Portfolio.
3. **"Ready For Research" Workshop:** In the 2014 Fall Semester the S-STEM Freshman Scholars will be required to participate in a 3-hour URSC (**U**ndergraduate **R**esearch, **S**cholarly Endeavors and **C**reative Practice) workshop that certifies students as "ready for research." This workshop provides students with a basic understanding of the culture of undergraduate research, including its importance to the university and student achievement. As a required part of these workshops, S-STEM Freshman Scholars will be expected to attend the workshop, and serve as a volunteer assistant and **present a poster showcasing their ENED 1020 Grand Challenge Project** at the annual UC Undergraduate Research conference in April 2015. S-STEM Freshman Scholars who

participate in a faculty-led research project may also present their work at the conference, with presentation assistance provided by URSC if necessary.

4. **McNair Scholars Peer Mentoring Program:** To further support the work of the S-STEM Freshman Scholars, the Offices of URSC and McNair Scholars are developing a peer mentor program that unites McNair Scholars and RECON (**R**esearch, **E**ducation and **C**reative **O**pportunities **N**etwork) peer mentors. These McNair-RECON mentors will be strategically selected from current McNair Scholars and provided with enhanced RECON training through URSC. Specific mentor training resources will be developed jointly by Dr. Cheri Westmoreland (McNair) and Dr. Cory Christopher (URSC).
5. **Research Experience with McNair RECON Mentor:** Once an S-STEM Freshman Scholar completes the research workshop, he/she will be paired with a McNair RECON mentor. S-STEM Freshman Scholars will be expected to meet with their mentor at least four times during the 2014-2015 academic year, and in each meeting, they will be given a specific task to complete. These tasks include getting research-specific certifications (if necessary, and depending on the discipline), completing a draft CV, shadowing a graduate student, etc. Specific deliverables from the McNair RECON program include completion of a CV and a research interest and career objective statement, which will include a reference-supported background that places the student's interest(s) into an academic and actionable context.
6. **Research Skills Workshops and Seminars:** During 2014-2015 an Academic Year (AY) Research Experience for Undergraduates (REU) Program will be conducted as part of a NSF STEP grant. In this REU Program, a series of **research skills training workshops** are held to train the participants to become proficient disseminators of research - written reports, papers, posters, and oral presentations. Each year seven interactive workshops are provided: Safety Training; Technical Writing and Presentation; Online Literature Search; Project Documentation (Photography and Video Recording); Statistical and Uncertainty Analysis; Poster Making; and Public Speaking and Communications. In addition, an **enrichment training seminar series** introduces the role of interdisciplinary research in modern society, the scientific research process, and the opportunities it creates. Each year four enrichment seminars are provided: Ethics in Engineering Research; Research in an Academic Setting; Taking Research from Lab to Real-World; and Graduate Education Opportunities & Application Process. These workshops and seminars are repeated both in the fall and spring semesters. The Freshman S-STEM Scholars will be required to complete: the workshops on "Poster Making" and "Public Speaking and Communications" (2 workshops); and choose any other two workshops or seminars. Thus in total they are required to attend 4 workshops and seminars and submit for each a 1000-word reflection upon completion. The format for the reflection will be given.
7. **Entrepreneurship New Venture Creation Experiential Learning:** In the 2015 Spring Semester the Freshman S-STEM Fellows will have an opportunity to participate in a 3-hour case study, *The Team Toy Works Company*, which will be introduced as an in-class discussion exercise leading to students in teams developing the concept of a small start-up toy company that would introduce a new line of unique concept toys for children ages 3 to 12. This experiential entrepreneurship learning experience will be conducted by Dr. Charles Matthews, Professor of Entrepreneurship and Strategic Management, Lindner College of Business, University of Cincinnati. Basically, the case is designed to spark discussion around five key new venture start-up questions: (1) What business are we really in? (2) How should our company be structured? (3) How will we pay for this new business? (4) How and to whom will we sell our goods and/or services? and (5) Other considerations and issues. These build on the three key strategy questions: (1) Where is the business? (2) Where does it want to go? and (3) How does it plan to get there? Each team will prepare brief response for each of the five discussion questions; each response is recorded in writing by one team member in rotation. Each team then outlines three to five bullet points for each question on a white board. Finally, using these bullet points each team orally present their findings and answers questions. The final presentation and discussion is videotaped.