

Publicly Releasable Project Summary/Abstract: Integrating workforce development for STEM is an urgent need in higher education. Of particular concern is supporting students who are traditionally underrepresented in STEM, including students of color, first-generation college students, veterans, transfer students, and those from low socioeconomic backgrounds. These students experience unique challenges with persistence in STEM, contributing to their decreased participation in the STEM workplace.

To address this need, we propose an evidence-based program grounded on our theoretical understanding of students' career development to promote student knowledge of and engagement with various STEM careers. Based on the social cognitive career theory, three main, interrelated factors shape students' career choice: 1) students' knowledge of STEM vocations, 2) students' affective value of STEM careers (i.e., attitudes and mindset toward different jobs) and 3) students' self-efficacy, or confidence in their ability to succeed.

The proposed Sustaining and Promoting Internships and Research Experiences (SPIRE) program at Chapman University will address these factors to promote STEM workforce development. The program will include 25 students from underrepresented backgrounds in their first two years at the university since early interventions play integral roles in promoting interest in STEM. SPIRE will provide near-peer mentoring, support for professional development, and career exploration, with the goal of guiding students to identify and join an internship or research opportunity in a STEM area aligned with the Air Force Office of Scientific Research's focus areas.

First, the program will form long-term near-peer mentoring groups to provide a community for students interested in similar areas of STEM. In addition, mentors – senior students, graduate students, or recent alumni who participated in internships or research experiences – will share their experiences and provide guidance and feedback. This enables SPIRE program participants to receive mentorship while they explore, apply, and join an internship or research experience. The second feature of the SPIRE program is a professional development course, led by STEM faculty and career advisors, that focuses on identifying internship and research experiences. The course will develop students' résumés, cover letters, and personal statements, and cultivate their networking and interviewing skills. The program will also provide career exploration activities, including visiting LA Air Force Base, home of US Space Force's Space Systems Command, and holding career chat conversations with faculty and industry professionals working in AFOSR focus areas. Together, these activities will increase students' knowledge of STEM careers, excite students about these fields, and increase students' self-efficacy by providing structured support for identifying, applying, and joining internships or research experiences. The SPIRE program will also provide small stipends to participants to defray costs of traveling to internships or research experiences, thus minimizing financial barriers for participating in such experiences.

Finally, we will conduct mixed methods assessment to determine the SPIRE program's impact on students' interest and STEM persistence. We will use surveys and interviews of program participants and mentors to determine the influence of program components on the factors that shape students' career choice and track career progress of program participants. To ensure sustainability of the proposed program, we will amend future iterations of the program based on assessment data to meet students' needs.