Diversity Task Force 10/24/12
Overview of STEM initiatives at SDSU

What is STEM?
STEM refers to the areas of Science, Technology, Engineering, and Mathematics. STEM initiatives started as a way to promote education within middle and high schools in these related areas so students would be prepared to study STEM fields in college and pursue STEM-related careers.

STEM Initiatives in Engineering
- Dr. Larry Hinkle, Engineering Student Affairs Office
  - Provides academic resources and tutoring support
- MESA Engineering Program (MEP) [http://mep.sdsu.edu/]
  - Mission: To graduate underserved students in the fields of engineering and physical sciences increasing diversity in the technical workforce
  - Eligibility: First generation college students, first generation engineering and physical science majors, and/or have socio economic challenges
  - Activities: Provides advising, mentoring, tutoring, workshops, scholarships, internships, and peer support
  - Highlights: Academic workshops, E96 Orientation course, connection to industry, internships, and supporting diverse student orgs (SHPE, NSBE, PASE, SWE)
  - Funding: Given state budget cutbacks, MESA has been unable to completely fund the MEP. However, MESA continues to seek additional resources for this important program and is hopeful that state funding will be restored to the MEP in the future. Meanwhile, MEP centers receive the majority of funds from their host institutions and receive additional support from local industry partners.

- Troops to Engineers and S.E.R.V.I.C.E programs (Success in Engineering for Recent Veterans through Internship and Career Experience) [http://www.engineering.sdsu.edu/engineering/info_for_veterans.aspx]
  - Mission: Support veterans looking to re-enter the civilian workforce in engineering fields
  - Activities: Provide dedicated employment assistance and outreach to vets considering Engineering at SDSU
  - Highlights: Companies currently employing 51 vets
  - Funding: by National Science Foundation and industry partners

- Student Club and Organizations: Engineers without Borders (EWB), National Society of Black Engineers (NSBE), Pacific Asian Society of Engineers (PASE), Society of Professional Hispanic Engineers (SHPE), Society of Women Engineers (SWE)
- Engineering Study Abroad opportunities

STEM Initiatives in Sciences
- CASA programs – Center for the Advancement of Students in Academia [http://www.sci.sdsu.edu/casa/]
  - Mission: To promote the academic development of the next generation of underrepresented research scientists and health professionals.
  - Activities: opportunities to participate in faculty research, faculty and student mentoring, course enrichment workshops, travel to scientific meetings, travel to doctoral degree-granting institutions for future graduate study, and research experiences at NIH, other research institutions, and laboratories in foreign institutions.
- Louis Stokes Alliance for Minority Participation (LSAMP) [http://www.sci.sdsu.edu/casa/lsamp/]
- **Mission:** The goal of CSU-LSAMP is to broaden participation in science, mathematics, engineering and technology (STEM) disciplines and contribute to the national agenda to increase the number of low income, first generation and/or underrepresented minority students receiving baccalaureate degrees in STEM disciplines.

- **Activities:** Focus on strengthening the mathematical skills of these students and continues to support students and they prepare to apply for graduate programs.

- **Funding:** National Science Foundation and the California State University

- **SDSU Bridges** [http://www.scibridge.sdsu.edu/](http://www.scibridge.sdsu.edu/)
  
  - **Mission:** The NIH Bridges to the Baccalaureate Program provides support to institutions to help students make transitions at a critical stage in their development as scientists, from a two-year community college to full four-year baccalaureate program. Train 20 students a year from the three partnering colleges to complete their bachelors degree training. The outcome of the program will be to produce highly competent young scientists.
  
  - **Eligibility:** 'Bridges' targets students from groups underrepresented in the biomedical and behavioral research enterprise of the nation and/or populations disproportionately affected by health disparities.
  
  - **Activities:** The Bridges Program has helped students achieve their academic objectives through enrichment courses in laboratory skills, research ethics, biomedical research techniques, technical writing, chemistry, microbiology, human physiology, calculus, computational biology, and a colloquium addressing minority health care disparities. Bridges to the Baccalaureate provides support for student, faculty and institutional development activities.
  
  - **Highlights:** SDSU will continue its successful fifteen year partnership with three local community campuses - San Diego City College, Grossmont College, and Southwestern College - in which 75% of past and current Bridges students have transferred or are preparing to transfer to SDSU or other four year university.

  - **Funding:** NIH

- **Institutional Research and Academic Career Development Award (IRACADA)** [http://pharmacology.ucsd.edu/IRACDA/iracda/index.html](http://pharmacology.ucsd.edu/IRACDA/iracda/index.html)
  
  - **Mission:** IRACDA aims especially to promote the advancement of under-represented minorities. Designed to provide three years of mentored, post-doctoral support in biomedical research in selected labs at UCSD and SDSU, and a mentored experience in teaching.
  
  - **Activities:** Supporting advanced mentored research, training directed at preparing post-docs to enter the professoriate: mentored lecturing to undergraduates at SDSU; a course in organization behavior and structure of universities and colleges, including interviewing and negotiating job contracts; grant writing; and a seminar series run by the post-docs. IRACDA also provides travel funding to attend a national meeting each year and the annual IRACDA conference.

  - **Funding:** NIH

  
  - **Mission:** Increase the number of well-prepared underrepresented ethnic students who can successfully gain acceptance into graduate programs leading to the Ph.D. degree in a biomedical science (biology, chemistry, psychology, epidemiology), and help develop a strong research curriculum with opportunities that will prepare students for careers in biomedical research.

  - **Activities:** Students who are selected as trainees can receive three-quarter tuition and a monthly stipend of $913.00.

  - **Funding:** National Institutes of Health.

- **Minority Biomedical Research Support (MBRS) – Initiative for Maximizing Student Development (IMSD) Program** [http://sci.sdsu.edu/imsd/imsd/](http://sci.sdsu.edu/imsd/imsd/)
  
  - **Mission:** to improve the participation of historically underrepresented students in the sciences and increase the number of underrepresented students who matriculate directly to a Ph.D. program.
Activities: intensive undergraduate research training program which prepares students for direct entry into STEM (science, technology, engineering, and mathematics) or behavioral science Ph.D. programs.
Funding: National Institutes of Health (NIH)/National Institute of General Medical Sciences (NIGMS). We are pleased to announce funding will continue until 2017.

- McNair Scholars Program: Ronald E. McNair Postbacc Achievement Program http://www.sci.sdsu.edu/mcnair/
  - Mission: an innovative program that prepares talented students in the pursuit of doctoral study and careers in higher education.
  - Eligibility: Low income as defined by the US Department of Education and First generation to college (where neither parent completed a four year degree) and/or From an underrepresented group in graduate education (African American, Hispanic/Latino, Native American and Alaskan, other Pacific Islander/Native Hawaiian) and Should have a 3.0 or higher GPA, at least 60 units, in pursuit of a Ph.D
  - Activities: Twenty-five scholars are selected to receive stipends to conduct research with university faculty mentors, write research papers and present their work to professors and peers at regional and national conferences.
  - Highlights: The program has completed 15 summer research programs and 23 alumni have completed doctoral programs. Five of our alumni are currently in faculty positions and 10 are conducting post-doctoral research. Four of our alumni have completed M.D.s, two have completed J.D.s, one has completed a PharmD, one has completed a D.P.T. (doctorate in Physical Therapy), and one has completed an Ed.D. Forty scholars are currently enrolled in doctoral programs.
  - Funding: U.S. Department of Education TRIO

- Minority Health and Health Disparities International Research Training (MHIRT) http://www.sci.sdsu.edu/mirt/
  - Mission: international research experience that prepares students for a career in biomedical research. The long-term objective of MHIRT is to increase the number of underrepresented minority faculty in biomedical sciences.
  - Activities: Students on the SDSU/UCSD/University of Minnesota-Duluth MHIRT Program conduct biomedical research at an international site for up to three months.
  - Highlights: Students on our MHIRT program have conducted biomedical research all over the world.
  - Funding: Sponsored by NIH/The National Center for Minority Health and Health Disparities (NCMHD), since 1996

- Maximizing Science Potential (MSP) http://www.sci.sdsu.edu/casa/msp/
  - Mission: Modeled after the MESA Engineering Program (MEP), is designed to recruit, retain and graduate qualified minority students in the rigorous disciplines of science, such as physics, math, chemistry, computer science, astronomy, and geology.
  - Eligibility: MSP serves African Americans; Mexican and Latino Americans; Native Americans; and Puerto Ricans, since these groups have been historically underrepresented in the science professions.
  - Activities: enhance students’ ability to achieve a high level of success in their academic pursuits, thus increasing the number of underrepresented minority students who obtain degrees. New Student Orientation Class, the most intensive support is given during the critical freshman year. MSP offers an orientation course which focuses on assisting the student in transition to the new environment of a university. The orientation emphasizes effective study skills, explores career options, and assists in developing a network among students, in order to foster an attitude of mutual support. Counseling Services and Workshops, Academic advising helps each student to develop a plan of study, and to select appropriate courses. Personal counseling helps the MSP student to iron out financial, family, and other problems that can interfere with university studies. Events and Activities like Shadow Day and Calculator Olympics
- **Highlights:** We are particularly proud of our success with MSP because the majority of the students lack ideal preparation for college-level work and are first generation college students.

- **Career Opportunities in Research Program (COR)** [http://www.sdsucorprogram.sdsu.edu/](http://www.sdsucorprogram.sdsu.edu/)
  - **Mission:** to increase the number of well-prepared students from institutions with a substantial enrollment of underrepresented students who can compete successfully for entry into research career training programs leading to a Ph.D. in the field of mental health.
  - **Eligibility:** You are a member of an underrepresented group, full time SDSU junior or senior who is majoring in psychology, your goal is to obtain a Ph.D. in a mental health-related field, undergraduate with an overall GPA of 3.30 or better. Six to ten highly talented third and fourth year undergraduate students will be selected.
  - **Activities:** Students will be provided with special research training experiences designed to improve their qualifications for entry into advanced research training programs leading to a Ph.D. in the field of mental health. Matches students with faculty mentors. Students develop as professional researchers through hands-on training and interaction with faculty and other scientists. Students present their work at national meetings and network with other faculty and students from across the country. Hands on research in a faculty member’s lab, academic enrichment, monthly stipends, money for books and tuition, travel to professional conferences, including the National COR Conference, GRE prep course, summer externship, a network of support, Ph.D. program assistance and advice.
  - **Funding:** federally funded by the National Institutes of Mental Health

- **Clubs and Organizations**
  - SACNAS: Society for the Advancement of Chicano & Native Americans in Science
  - BSSO: Black Student Science Organization

**STEM initiatives in SDSU Career Services** [http://career.sdsu.edu/](http://career.sdsu.edu/)

Mission: Keep students connected with information, resources, and opportunities in the STEM fields to keep them motivated to stay in those majors and prepared to be competitive within them

Activities: SDSU STEM Careers Month, each October
- Security Clearance Symposium
- Graduate & Professional Schools Fair
- Speed Networking with the College of Sciences and Engineering
- Engineering and Sciences Career Fair
- STEM Careers Coffee Hour with Residential Education (STEM/WISE learning communities)
- SDG&E Industry Tour – students visiting a facility
- Women in the Boardroom – panel of C level executives in STEM fields
- Start Smart with STEM – salary negotiation workshop for women in STEM
- Counselor Liaisons to the Colleges of Sciences and Engineering

**STEM initiatives in SDSU Pre-College Institute**

Health Careers Opportunity Program (HCOP)

Mission: The Health Careers Opportunity Program, San Diego Regional Consortium (HCOP/SDRC) which is a partnership with The San Diego State University (SDSU) Pre-College Institute (PCI), The Scripps San Diego Border Area Health Education Center (SD/AHEC), nine Community Colleges participating in the UCSD "UniversityLink" Transfer Student Guarantee Program and 12 of their “feeder” middle and high schools in inner city, border, east suburban and rural communities.
Activities: the partners conduct academic enrichment programs that address the barriers to developing the knowledge, accessing the resources, and obtaining the academic preparation that can lead to a career in the health care workforce. At the high school level this includes our Research Methodology Training Laboratory (RMTL).

Pathways Office – STEM Careers in Education (preparing future teachers in STEM)

Past Activities Include (no longer funded):
Upward Bound Math/Science Program (high school)
Science Enrichment Program (middle & high school)
Student Support Services program – supporting 200 under-represented students in STEM areas (university)
STEM Exploration Day - main goals of (STEM)2 Exploration Day is to get students interested and excited about STEM and to give these students exposure to academic and career pathways. Bringing middle and high school students onto campus and having them participate in hands-on activities in the sciences, technology, engineering and mathematics fields is the first step to sparking that interest.”

General Observations
- Shortage in science, technology, engineering and mathematics (STEM) workers is threatening to push the United States from its global leadership position as a key innovator in these fields
- We must clearly articulate the educational case for diversity, showing how students and society benefit from it. Diversity in STEM leads to diverse thinking about problems and solutions.
- There are a number of quality programs at SDSU supporting underrepresented students in STEM but almost completely supported by outside funding sources. Is there a plan to support these initiatives by the University?
- # of underrepresented students currently enrolled in STEM majors at SDSU??
- The diversity of the faculty and administration in STEM departments?? Departments in the STEM fields are typically the least diverse nationally.
- Grants are now requiring information regarding the diversity of the faculty and students within STEM areas at institutions seeking future funding for programs and research
- Under-represented students in STEM fields need academic tutoring or workshops for their initial science and math courses in order to learn proper study skills for college-level STEM coursework
- Diverse STEM student clubs and organizations create an important peer and professional network for students
- Across the board executives point to the pre-college school system for low representation of women and minorities in science and technology fields. Important to create a STEM “pipeline” supporting under-represented students interest in STEM as early as possible (K-12, Community College, 4-year University, & Postbac)
- Internships and hands-on experiences are essential for women and other under-represented students to be competitive in STEM areas