FY 2008 Project Abstracts for the CCRAA - Hispanic-Serving Institutions Program

New Individual Grants

ARIZONA

Arizona Western College - P031C080124

Activity Description:

Arizona Western College (AWC), in Yuma, Arizona, is a two-year, publicly-supported college serving nearly 13,000 students annually, with a 59 percent Hispanic student population.

The service region is experiencing strong growth in science, technology, engineering, and mathematics-related (STEM) jobs, linked to the area's large weapons testing facility (Yuma Proving Ground); the nearby Marine Corps Air Station (one of the nation's largest staging areas for troop deployment to Iraq); and a new General Motors (GM) vehicle testing track. At the same time, the majority of AWC students are unable to gain access to these jobs because of their extreme deficiencies in math, the foundation for progress in STEM fields. Internal research reveals, in fact, that AWC students are failing the college's remedial, developmental math courses in large numbers, and those who fail these courses, seldom complete an Associate Degree or transfer to a four-year university (AWC Office of Institutional Effectiveness, Research and Grants [IERG], 2008). As a result, AWC's Associate Degree completion rates in STEM fields are unacceptably low (averaging only 8.2 percent of the total degrees awarded in the past five years) and transfer rates to universities in STEM-related fields are similarly low (IERG, 2008).

Following a comprehensive review of the math program, faculty and staff concluded that weaknesses in AWC's math curriculum and teaching/tutoring strategies, insufficient advising, inadequate facilities/technologies, and weaknesses in articulation with four-year universities were preventing students from succeeding in the all-important developmental math courses and reducing their opportunities to graduate or transfer. In response, the college proposes to strengthen the math curriculum and tutoring, based in part on guidelines developed by the American Mathematics Association of two-year colleges; strengthen advisement strategies, and renovate an existing building into a state-of-the-art *Math Learning Center,* where students will have access to modem technologies, strong advisement, and up-to-date instructional strategies. In addition, the college proposes to provide AWC students with new transfer opportunities with the implementation of streamlined articulation/transfer models developed with three universities - Northern Arizona-Yuma, Arizona State University-Tempe, and University of Arizona-Tucson.

Integration of the above strategies will result in achievement of the project's overall goals: To increase the number and percentage of Hispanic and low-income students who complete an Associate Degree in a STEM field and to increase the number and percentage of these target groups who continue their studies in STEM-related baccalaureate programs (with emphasis on engineering).

Central Arizona College - P031C080002

Activity Description:

Located near the small town of Coolidge (population 8,900), Central Arizona College (CAC) is the only community college in the 5,300 square miles of Pinal County, Arizona. Less than 150 miles from the United States.-Mexico border and between Phoenix and Tucson, Pinal County, is one of the fastest growing Hispanic regions in the United States.

This HSI-CCRAA project will tackle the unacceptably low numbers of Hispanic and other low-income students enrolling in and graduating from our science, computer science, engineering and mathematics (STEM) degree programs and then continuing their studies at four year institutions. As CAC works to address this problem, we face the obstacles of our county's large size and entrenched poverty, which reduce access to our college; the overuse of traditional lecturing in the STEM classrooms; a weak system of academic support and guidance for STEM students; a lack of introductory STEM classes designed to increase enrollment and retention in our STEM degree programs; and significant deficiencies in the STEM facilities, equipment, and learning technologies at our college. The project will also address the lack of a pre-engineering program that articulates with four-year institutions. Therefore, we are proposing an HSI-CCRAA project that:

1. Implements a system of academic monitoring that can refer STEM students to academic tutors and advisors and involves many STEM students having Master Academic Plans (MAPs) to guide them through the learning and transfer process.
2. Creates and implements STEM courses to increase enrollment in STEM degree programs through cultivating students' interest and ability in STEM disciplines.
3. Develops a pre-engineering program that articulates with the engineering degree program at Arizona State University and, in subsidiary, with the other baccalaureate-level engineering programs at Arizona's two other state universities.
4. Provides STEM faculty with professional development active learning pedagogy, which has proven to be particularly effective with underprepared students.
5. Uses media capturing and pod casting to improve students' access to our college and to enable students to repeatedly review class content for improved understanding.
6. Provides STEM faculty with professional development in media capturing and pod casting, so that these mediums are used effectively and frequently as learning tools.
7. Increases the bandwidth of our Wide Area Network and Internet networks so they have the capacity to handle the additional load of media capturing and pod casting.
8. Remedies the main deficiencies in our STEM equipment, technology, and facilities.

This work includes developing a modern, well-equipped, multi-use science lab in which science students can be actively engaged in the learning process and creating a mobile computer lab that supports learning in scientific concepts, inquiry, and analysis.

CALIFORNIA

California State Polytechnic University, Pomona - P031C080141

Activity Description:

The Cal Poly Pomona STEM Pipeline Project

California State Polytechnic University, Pomona (Cal Poly Pomona or CPP) in Pomona, California is one of 23 campuses that comprise the California State University system and is one of only six polytechnic universities in the country. Founded in 1938 and located 30 minutes from downtown Los Angeles, CPP is an ethnically diverse institution serving a total population of over 19,000 undergraduate and more than 1,100 graduate students.

The goal of the proposed CPP STEM Pipeline Project is **to strengthen the pipeline from high school through graduation in order to increase the retention and graduation of Hispanic and low-income students in STEM disciplines.** To achieve this goal, CPP engaged in an extensive planning process; quality was in mind from the start, and tested evaluation principles were woven into every aspect of the plan. The result is a comprehensive project design comprised of the following objectives:

1. Build a formal STEM learning community composed of high school, community college, and CPP faculty.
2. Offer enhanced academic counseling services to community college students before and after they transfer to CPP.
3. Develop a seamless transfer process, focusing on STEM degree tracks.
4. Establish a pre-engineering course and lecture series at Riverside Community College.
5a. Upgrade CPP's STEM technology to enhance curriculum and engage students.
5b and 5c. Expand CPP's tutoring center and establish an undergraduate research program.

The CPP STEM Pipeline Project will monitor and address weaknesses at every transition point in the pipeline, helping Hispanic and low-income students to obtain their degree and successfully pursue careers or graduate education in STEM disciplines.

Cañada College - P031C080188

Activity Description:

Creating Opportunities for Math, Engineering, Technology and Science (COMETS)

Cañada College enrolls 6,686 students, many of whom are the disadvantaged residents of San Mateo County.

With 86.8 percent of Hispanic students placing into Pre-Algebra or Beginning Algebra, we identified lack of achievement in mathematics and length of time spent in developmental math as the single greatest obstacle to student success, persistence and transfer preparation in STEM. Also, students have little knowledge of the careers available or the training needed to obtain these career goals.

Committed to a *mission ensuring that students from diverse backgrounds have the opportunity to achieve their educational goals*, the Cañada College COMETS project will develop a model program with systems and coursework designed to help Hispanic and other low income STEM students accelerate their completion of prerequisite math courses for STEM majors. The main goal: shorten the time students need to enroll in transferable level science classes. This will be accomplished through an intensive six-week summer program in math instruction designed to raise the math placement level by at least one step. Then, during the regular school year, a Math Lab will be made available to students featuring self-paced, accelerated math instruction, with faculty-guided instruction, instructional aides and tutors present for extended hours.

Curriculum will also be developed to incorporate hand-on scientific experiments into mathematics training so students can see the applications of mathematical concepts and use real-life examples while learning math. Experiments will be done using sophisticated scientific equipment, not models or simulations. Career pathways and options will be explored to help sustain interest in STEM fields while participating in the accelerated math programs.

The project will also provide significant support for students transferring to four-year institutions to pursue STEM degrees. A dedicated articulation and transfer specialist will convene a Transfer Summit, and will develop and provide access to transfer materials. Students will have multiple opportunities to participate in interesting and informative transfer activities.

Chaffey College - P031C080034

Activity Description:

Chaffey College is a large two-year, public community college in Rancho Cucamonga, located in the Inland Empire of San Bernardino County, 40 miles east of Los Angeles, California.

Project Services and Strategies: to establish new, strengthened and replicable, 2+2+2 transfer and articulation agreements which will open sustainable pathways to careers in Engineering, Engineering Technology, and Biology.

Chaffey will strengthen the articulation of the Engineering transfer pathway to four-year institutions and create (and articulate for transfer) a new Engineering Technology degree. The biology curriculum will be realigned for articulation with four-year institutions, and equipment in several STEM labs will be upgraded to align with sophomore level four-year laboratory and instrumentation. Academic and student support services for STEM students will be improved by expanding supplemental instruction, creation of a Science Success Center, the hiring of a STEM Counselor, and creation of learning communities to promote the success and progression of Hispanic engineering and biology students. A field experience component for Hispanic engineering students will be developed and outreach to feeder school districts to increase the academic preparedness of future Hispanic STEM and Engineering students will be strengthened.

Citrus College - P031C080211

Activity Description:

Citrus Connect! A Model Pathway to the Baccalaureate in STEM Fields

Citrus College is a public; two-year Hispanic-serving institution (HSI) located in Glendora, California, a community with a rapidly growing Hispanic population within Los Angeles County. The direct service area for Citrus College includes the densely populated heart of California's San Gabriel Valley, an area in northeast Los Angeles County increasingly characterized by growth, economic extremes and diversity – the Ellis Island of the 21st century.

The ***Citrus Connect!*** Project has three components: (1) Broadening Access to Citrus through Community Outreach and High School Bridge Programs; (2) Providing a Seamless, Fully-Articulated and Supportive Pathway to Baccalaureate Degree Completion in STEM fields; and (3) Evaluating and Sustaining the Degree Pathway. By accomplishing these objectives, the *Citrus Connect!* Project will not only address both CCRAA HSI Program priorities, it will connect Citrus College students to the 21st century.

Cypress College - P031C080003

Activity Description

Cypress College- Science Grant Application. Cypress College (CC), Cypress, California, is an accredited public two-year institution, and one of two colleges in the North Orange County Community College District. It serves a densely populated urban region that is experiencing an unprecedented population surge. The vast majority of the population increase and additional students is expected to occur among the minority populations.

Due to the large and growing percentage of Hispanic students enrolled in the college, there is a great need to establish programs that support Hispanic and other underrepresented students in Science, Technology, Engineering, and Mathematics (STEM) disciplines to ensure that these students transfer to a four-year university and obtain their baccalaureate degrees. We need to improve the participation and success rates of underrepresented minorities in college level STEM classes at CC. Many students who do not complete these courses either switch out of science-related majors or drop out of college. The proposed project will focus on several main areas: (1) extensive outreach and recruitment at high schools within the area to develop interest in STEM; (2) developing a focused program for ensuring success in STEM courses; (3) channeling CC STEM students into a summer Bridge Research experience at CC and at the CSUs and UC universities to increase transfer rates; (4) substantially upgrading the science laboratory equipment and classroom technology at CC; and (5) developing new and expanded articulation agreements with the universities.

Outreach to area high schools will be done in order to promote the interest of prospective underrepresented students and their parents. The project will also include outreach to the CC student body in order to attract more of our students to our STEM program. CC will also improve existing student support services by focusing articulation, counseling, transfer, financial aid, tutoring, and supplemental instruction to the goal of increasing the number of Hispanic and underrepresented students in STEM fields.

East Los Angeles College - P031C080128

Activity Description:

Green Science & Technology Curriculum

GOALS: (a) Increase the percent of Hispanic and other low-income students attaining degrees in STEM fields from 5.6 percent to 12 percent (an annual increase of approximately 200 STEM graduates); and (b) Complete "Green Science and Technology" curriculum modification in 15 courses at East Los Angeles College (ELAC), representing an increase of 13 courses (650 percent increase over the 2007-08 baseline) of two courses modified and articulate the courses with regional universities.

PROJECT DESIGN: (a) *Increase admission of math-ready high school graduates* by linking ELAC Engineering admission to the effective Escalante math enrichment program operating at local high schools; (b) replicate the Escalante summer training model with a Summer Science Academy that introduces research and scientific methods, asks each student to conduct environmental research projects, and uses peer evaluation to validate results; (c) "green" content revision of 15 gateway courses in six STEM disciplines; (d) community environmental service activities for 200 students to reinforce their studies in STEM courses; (e) extended lab capacity for environmental science; and (f) improved articulation with California State University and University of California institutions.

El Camino College - P031C080063

Activity Description:

El Camino College (ECC) located in Torrance, California is proposing a project entitled *Improving Student Success in STEM Transfer.* The project is designed to strengthen the El Camino College STEM programs to increase the number of students attaining degrees in science, technology, engineering and mathematics, and increase the number of students – especially Hispanic students, who successfully transfer to universities to pursue degrees in these fields.

To address identified gaps that prevent more ECC students (particularly minority and low-income students) from majoring and transferring in STEM disciplines, the proposed project includes the following components: (1) Develop a New 2+2+2 Articulated Program in Biological Technology, and Articulate (expand/strengthen transfer components) the Existing Engineering Technology Program; (2) Strengthen STEM Transfer Pathways through (a) Infusion of Student Research Opportunities across STEM Disciplines; (b) Augmenting Articulated Pathways in Engineering; and (c) Improving Science Articulation; (3) Expand the Math, Engineering and Science Achievement (MESA) Center and Implement New STEM Enrichment and Support Strategies in conjunction with the MESA Program; (4) Strengthen STEM Pathways from High Schools to ECC via summer bridge programs and consistent outreach.

Project objectives include (1) increasing overall student transfer in STEM fields; (2) increasing Hispanic students' transfer in STEM fields; (3) increasing Hispanic and overall ECC degrees and certificates awarded in STEM; and (4) increasing the number of articulated technology programs at ECC by developing a new Biotechnology program and strengthening articulation/transferability in the Engineering Technology program.

Fresno City College - P031C080181

Activity Description:

The Fresno City College (FCC) College Cost Reduction and Access Act (CCRAA) Hispanic-Serving Institutions (HSI) Program proposal was developed in direct response to the overwhelming need in the target area for program services that college enrollment, retention and graduation of Hispanic, low income and potentially first generation students in math, science and engineering courses. The target students for this project enroll in these fields in extremely low numbers, and are often lacking the academic skills, self-esteem, role models, and family guidance to complete such degrees in their college education. FCC has responded to the tremendous need to provide advanced educational services in this area by designing a comprehensive science, math, engineering and technology (STEM) program for these students.

FCC's STEM project will strengthen the ability of the Math, Science and Engineering (MSE) Division to meet the needs of low-income and underrepresented students. Project services will include the following: Instructor and peer mentoring, campus community building, enhanced transfer and career counseling, model transfer and articulation agreements, and academic improvements in equipment resources. Educational research has demonstrated that an integrated approach utilizing greater faculty-student contacts, tutoring, peer networks and greater career awareness to increase motivation are the elements that contribute to long-term retention of underrepresented students, especially Latino students. This new approach, along with an effort to focus on creating classes that articulate well with the Lower Division Transfer Patterns Project (LDTP) statewide system will create a seamless transfer between California community colleges and the state universities.

Hartnell College - P031C080096

Activity Description:

A Project to Improve Hispanic and Low Income Student Success in STEM

Hartnell College is a Hispanic-serving, comprehensive, public, two-year degree granting, accredited California Community College. For nearly 90 years, Hartnell has provided responsive, accessible, postsecondary education to the historically agricultural region of the Salinas Valley of west-central California, 100 miles south of San Francisco. Through this project, Hartnell will build on institutional strengths and leverage resources to address serious problems impeding institutional development: poor student enrollment, performance, transfer, graduation, and success in science, mathematics, engineering, and technology (STEM) courses and majors. As a mission-driven institution, Hartnell is committed to improving the educational and career opportunities for Hispanic and other low-income students.

This project will focus on improving mathematics and science courses and the academic support structures for STEM students. The project targets identified, key gateways in the educational process focusing on basic and college-level mathematics, biology, and chemistry.

Methods to achieve project goals include: curriculum development; new and improved courses; mathematics academy; updated laboratory equipment; supplemental instruction; expanded tutoring services; visiting scholars/role models; improved classroom practices; faculty and staff training; improved assessment; improved data collection; enhanced articulation; and evaluation. Key performance measures: improved enrollment, persistence, retention, performance, transfer, graduation and success in key mathematics and science courses; improved graduation and transfer in STEM majors; improved assessment and student placement; improved teaching methods; enhanced articulation; expanded data collection.

Los Angeles Valley College - P031C080025

Activity Description:

Los Angeles Valley College (LAVC), one of nine community colleges in the Los Angeles Community College District, is a public, comprehensive, open-door community college serving 6,494 Hispanic students in Los Angeles' San Fernando Valley, an urban area where 70 percent of residents are minority and 62 percent are Hispanic.

The College is challenged to expand access to STEM programming, to support the success of students coming to the college from underperforming service area high schools, and to develop systems for effective STEM advising and transfer.

We propose, therefore, to convert key STEM courses into accessible, effective online and hybrid formats. We will also develop targeted, course-specific support through Supplemental Instruction and flexible online tutoring. Redesigned online STEM advising will improve LAVC's advisors' capacity to guide students through appropriate coursework leading to STEM majors, while STEM Summer Bridge will prepare participants for STEM persistence and success through intensive academic workshops and orientation to STEM coursework, resources, and career opportunities. Finally, model STEM articulation agreements with nearby University of California Los Angeles and University of Southern California will facilitate persistence through the STEM educational pipeline.

Moreno Valley Campus, Riverside Community College - P031C080142

Activity Description:

Moreno Valley Campus (MVC), Riverside Community College District, located in Southern California in the city of Moreno Valley, is a designated HSI, two-year public, comprehensive, community college campus.

Moreno Valley Campus is seeking CCRAA HSI funding, targeting Hispanic and other low-income students, to develop an integrated approach involving academic and student support services designed to increase STEM persistence, success, transfer and graduation rates of targeted student populations. This is a single, integrated activity that represents an aggressive approach to institutional change, specifically addressing improvements in STEM student learning and success.

Building on STEM research and literature, including best practices, MVC will refine, expand, enhance, and integrate a series of STEM activities that will better address the needs of our STEM students with a focus on Hispanic and other low-income students. **Project SUCCESS** creates a STEM Student Success Center (SSSC) designed to provide students the opportunity to explore and engage in STEM fields of study, STEM careers, current STEM research and literature, and STEM support services (tutorial services, supplemental instruction (SI), mentoring, etc.). Through SSSC, targeted students will experience project-based learning, hands-on and interactive SI and tutoring, and a multitude of STEM multimedia and library resources. STEM Counselors and Educational Advisors will provide students with comprehensive support services including case management counseling; career and transfer programs; STEM Summer Bridge programs; STEM career, transfer, and study skill courses; financial aid and scholarship information; STEM workshops and seminars; and any other resources or referrals needed.

MVC proposes a comprehensive and well-coordinated effort between STEM academic and students support services to provide supplemental focus and assistance to targeted students. A core aspect of **Project SUCCESS** will be to utilize the expertise available through partnering universities to improve the quality of STEM transfer pathways and programs, STEM articulation agreements, and STEM faculty development programs. In working with partnering universities, MVC seeks to address STEM articulation of standards and improvements in the preparation of students before transferring while exploring STEM faculty development through faculty exchanges, internships, mentor programs, and STEM research.

Mount St. Mary's College - P031C080011

Activity Description:

Historically, Mount St. Mary's College, a small, four-year Liberal Arts college, has been more inclusive of underrepresented students than similar colleges.

Mount St. Mary's College has identified the following needs: (1) Entering math skills are low and; retention in STEM majors and courses is low; (2) too few students' survive freshman year; need new methods to sustain STEM interest; (3) barriers in curriculum and faculty isolation in STEM pathway, high school through college. In response to these needs MSMC proposes the following: (1) Develop a STEM center to address career/academic advising, offer tutoring and Summer Academies; (2) faculty development and student hands-on research; and (3) develop a transfer/articulation model to include high schools, community colleges and MSMC.

The goals of the project are: (1) to increase STEM majors' career focus, math skills, persistence, performance and engagement; (2) increase STEM faculty pedagogical skills to build and sustain STEM students' interest; and (3) reduce isolation of faculty for students' benefit with a simplified and clear curriculum pathway.

Mt. San Jacinto College - P031C080126

Activity Description:

Mt. San Jacinto College (MSJC), San Jacinto, California, is a public, Hispanic-serving, two-year degree granting community college in Riverside County, California, with a fall 2006 unduplicated headcount enrollment of 13,781 and a Hispanic student population of 3,923 (28 percent). MSJC has three main sites that are located in the communities of San Jacinto, Menifee, and Temecula.

The activities of the proposed project are organized into two major components: (1) Faculty and Curriculum Development; and (2) Student Support Development. MSJC is adopting a holistic approach to optimize: (1) the percentage of Hispanic students receiving STEM degrees and/or transferring from two-year to four-year institutions; (2) increasing student success and retention rates in transfer-level STEM courses; (3) improving the completion of student education plans; and (4) increasing student support services. Each component focuses on a comprehensive effort to affect the goal of increasing student success by improving retention and completion of educational goals – in particular the success of Hispanic and underprepared students.

Faculty and Curriculum Development: will include STEM professional development and educational training for MSJC faculty and local K-12 teachers, implementation of a STEM Teaching Academy, industry/business externships/apprenticeships, and STEM Teaching Communities. Other instructional interventions will include curriculum development and supplemental instruction in five of the transfer-level STEM courses. Curriculum development will include revising and/or developing curriculum to address the current gaps identified by the college to ensure the successful completion of students' educational goals.

Student Support Development: will strengthen learning assistance through cross-disciplinary tutoring, advising/counseling (personal, academic and career), mentoring services, case management, completion of student education plans, development of a STEM early alert system for at-risk students, and outreach for Hispanic and under-prepared students as well as student success workshops, seminars, STEM Summer Bridge program, STEM major/career fair and four-year college tours. Appropriately trained staff will ensure that students receive professional guidance in the identification of educational goals, appropriate course placement, and referrals to supplemental assistance with academic or personal challenges.

Los Angles Pierce College - P031C080099

Activity Description:

Pierce College is a comprehensive, public two-year college located in Woodland Hills, California. One of nine members of the Los Angeles Community College District (LACCD), Pierce enrolls over 20,000 students a year, 30.6 percent of whom are Latino and 53.6 percent of whom are low-income.

The purpose of this CCRAA proposal is to: (1) upgrade and supplement existing equipment to create up-to-date labs for quality learning experiences across the science curriculum; (2) develop curricula including a new program in Environmental Technologies and a "green" emphasis within the existing Automotive Technology program; (3) provide student support (tutoring, academic advising, transfer assistance) in a new Math/Science Emporium within the new Center for the Sciences; and (4) develop model 2 + 2 articulation agreements with area universities.

Reedley College - P031C080160

Activity Description:

Reedley College (RC), an associate degree-granting institution of State Center Community College District (SCCCD), is located in the rural community of Reedley, in Fresno County, California, 30 miles southeast of Fresno. There is an immense need in the RC service area to encourage students to major in STEM related fields. RC has a scarce number of STEM transfers, weak articulation with the new University of California Merced Campus, and a lack of STEM Honors courses along with math barriers for its' students. RC and it's surrounding feeder high schools have inadequate labs along with insufficient funding to improve both math and science programs.

Goal 1: Increase the number of Reedley College Hispanic students who are awarded degrees in STEM fields. Goal 2: Increase the number of RC Hispanic students transferring in STEM fields. Goal 3: Increase the number of Reedley College articulated classes and transfer major pathways with UC Merced. Goal 4: Increase success rates in transfer math courses and prerequisites. To accomplish this, Reedley College CCRAA's grant proposal focuses on:

1) Articulation: (a) Articulation Agreements between RC and UC Merced; (b) RC will create a STEM career pathway that begins at the high school level and leads to university transfers thus encouraging Hispanic students to major in STEM related fields; (c) RC will work with California State University, Fresno, in having their campus offer engineering courses at RC; (d) RC will create a new *STEM Honors Program*; (e) STEM Career Discovery and Transfer Center will be created for students to have a STEM resource; (f) Creation of RC Collaborative Council, (RC 3), on STEM which will be made up of STEM faculty, counselors, and administrative representatives from middle school, high school, community college, and universities.

2) STEM Field Service Learning: (a) *STEM Semester Projects*: STEM students will choose a faculty advisor who will help them choose a semester long project relevant to the courses that the student is taking that semester; (b) *STEM Outreach:* STEM students will participate in activities to promote their fields along the lines of the "STEM Ambassadors;" and (c) RC STEM students will host a STEM conference for both middle and high school students.

3) Improvement of Science Labs and creation of Math Study Center. RC science labs currently do not adequately prepare students for the next level of science courses. RC proposes to improve labs in: ***Agriculture, Biology, Chemistry***, ***Engineering and/or Physics.***

Riverside City College - P031C080059

Activity Description:

Riverside City College (RCC) is applying for an individual development grant under the College Cost and Reduction and Access HSI grant program from the Department of Education. Along with the four-year partners, California State Polytechnic University, Pomona and California State University San Bernardino, the ***Access to Success*** Program will focus on the improvement of student learning and student success in STEM fields of study.

The program will provide a variety of student activities from peer mentoring to tutoring and counseling for RCC students in a STEM engagement center and has four goals: Increase the number of under represented minorities, women and veterans who want to attend RCC and major in the biological or physical sciences, engineering, mathematics or computer information systems. Increase student retention by increasing the number of students in STEM core courses who enroll in a second course after successful completion of the first. Provide an arena for sharing and collecting "effective practices" amongst CCRAA awardees and other community colleges and their four-year institutions for dissemination purposes and expansive impact. Update the articulation agreements with California State Polytechnic University, Pomona in biology, mathematics, Computer Information System and engineering.

The ***Access to Success*** program was specifically designed based on the Department of Education's two priorities of increasing the number of Hispanic and other low income students attaining degrees in the fields of science, technology, engineering, or mathematics; and developing model transfer and articulation agreements between two-year HSIs and four-year institutions in such fields.

San Bernardino Valley College - P031C080213

Activity Description:

Science and Math Student Success Consortium

San Bernardino Valley College (SBVC), an HSI, proposes a CCRAA grant that articulates student needs and demonstrates a process to accomplish two major objectives:

1) **To increase the number of successful underrepresented and low-income students receiving degrees in STEM disciplines;**

AND

2) **To develop model transfer agreements between SBVC and four-year institutions, thus providing a seamless transition for students.**

The proposal for the first objective encompasses expanding the capabilities of the SBVC Math and Science Student Success Center (MAS^3C), strengthening the facilitator training by developing a Learners to Leaders mentoring/leadership program, enhancing programs that promote and encourage high school students to pursue science and math careers, and developing a summer bridge program to create a cohort of successful science and math students.

The second objective of the grant has several components involving our four-year institution partners. This document will describe the development of discipline-specific Transfer Articulation Guarantee (TAG) agreements, a pilot cross-enrollment program with a local university, summer research opportunities for students at our partner institutions, and educational equipment purchases to enhance the lab experiences of community college transfer students.

San Joaquin Delta College - P031C080073

Activity Description:

Increasing Access to STEM at San Joaquin Delta College

Delta College is challenged by a large number of underprepared Hispanic and low-income students who are underrepresented in STEM courses. Too few of them successfully complete STEM course work or transfer to four-year universities to pursue STEM degrees. The goals of this project are to: (1) increase the number of Hispanic and low income students who are academically prepared to graduate and transfer with a long term goal of entering STEM professions; and (2) to strengthen the transfer pipeline between Delta College and seven four-year universities.

The college will utilize the CCRAA grant to strengthen its STEM curriculum to ensure that it is well aligned with four-year colleges; collaborate with regional industry leaders to build STEM career connections for students; engage in outreach activities with Hispanic and low income families and high school students to promote STEM careers; sponsor faculty workshops to address cultural patterns that can build a foundation for student success in STEM disciplines; reopen the college's planetarium and expand the use of technology and lab equipment in STEM learning environments; and promote student success through the creation of learning communities across STEM courses.

University of California, Riverside - P031C080183

Activity Description:

Three major challenges lie before us in pursuing this mission. We must: (1) enhance the number of Hispanic and low-income students who are academically prepared to major in the STEM fields at four-year institutions; (2) make their transition to the university a smooth and successful one; and (3) support them academically during their formative period of study in the STEM majors.

University of California, Riverside (UCR) proposes to address these challenges by achieving three goals. The *pre-matriculation goal* will send advisors to six partner HSI community college campuses to hold regular informational sessions with counselors and students regarding articulation agreements, application procedures, financial aid options, STEM careers, and the courses needed to prepare for university-level work in the STEM fields. The *transition goal* will promote a successful transition for those Hispanic and low-income community college students who choose to matriculate to UCR. We will bring these students to the campus during the summer before matriculation to work in research laboratories, to become acquainted with faculty, academic advisors, and peers, and to engage in workshops familiarizing them with campus resources and the culture of a major research university. The *student success goal* will utilize program models that have a proven record of success at the freshman level at UCR, and apply them to the junior year when students are entering the critical gateway courses in the STEM majors. These programs include supplemental instruction facilitated by upper division undergraduates in select courses, early warning signals of academic difficulty in courses, intrusive advising, and community building through dedicated spaces for STEM students to congregate and study together.

Ventura College - P031C080127

Activity Description:

Ventura College (VC) has grown to a 40 percent Hispanic enrollment. Many of these students who reside in and commute from low-income areas, are first-generation college students, and have few STEM role models. A third of all VC students have "Undecided" as their major.

The project consists of outreach efforts to increase the number of VC STEM majors to ultimately increase transfers; improved services to STEM students to increase transfer and degree attainment; purchase of STEM equipment to expose students to its use and for joint field and research activities; renovation to develop two additional labs plus mobile lab capability, transfer services including SAT test preparation; and development of a model Articulation and Transfer Agreement built around Program to Program, course and sequence, and multiple exit points. More specifically we will work with our two university partners (California State University-Channel Islands [CSU-CI] and University of California at Santa Barbara [UCSB]) to develop STEM program-to-program pathways to develop a model Articulation/Transfer agreement based on at least one STEM program that can be replicated. This follows a model we are already beginning with K-12's on a separate grant, run by the same project director. Peer to peer meetings of counselors and advisors among institutions will improve communication and information flow to STEM students.

COLORADO

Trinidad State Junior College - P031C080095

Activity Description:

Transforming Science, Technology, Engineering, and Mathematics (STEM)

Trinidad State Junior College (TSJC), the oldest two-year public college in Colorado is a public, Hispanic-serving institution. TSJC is proposing a CCRAA Individual Institution Project to increase the number of students enrolling, retained, completing and transferring to four-year institutions by transforming TSJC's science, technology, mathematics and engineering programs. Students in an eight county region of Southern Colorado, including 17 high schools will be served by the Transforming STEM project. TSJC has developed a partnership with Colorado State University Pueblo, 85 miles north of Trinidad, to facilitate a seamless transfer for STEM students.

Goals: ***Transforming STEM*** is a single activity, designed to significantly increase the number of disadvantaged students entering and completing STEM coursework.

Specifically, three components will guide *Transforming STEM*:
1. STEM Enrollment: Through outreach activities, new STEM programming and the creation of an endowment fund, TSJC will excite and motivate new and existing Hispanic and low-income students to earn STEM degree.
2. STEM Success: Enrolled students will achieve high levels towards STEM degrees through enhancement to existing programs, new academic opportunities and resources.
3. STEM Transfer: TSJC will create new model articulation agreements and upper level coursework opportunities for STEM students through new relationships with four-year institutions.

Otero Junior College - P031C080009

Activity Description:

Strengthening Science, Technology, Engineering, and Mathematics (STEM)

Otero Junior College's CCRAA project, "Strengthening STEM," is designed to assist the college in increasing the number of students seeking degrees in STEM fields. Specific project components (activities) will enable OJC to improve its associate degree programs in math, science and technology while working to develop model transfer agreements with four-year institutions. OJC is initially focusing its project on two high-growth STEM fields: engineering and computer programming. The specifics of the project were developed with the help of a detailed self-study, outside input (including our recent accreditation process) and the use of current statistics and research into best practices. Three project components have been identified to address the needs of our target population, the Hispanic and disadvantaged students in OJC's service area. These components are:

- **Student retention and enrollment:** Encourage retention through the development of activities such as outreach, tutoring and the development of new STEM courses.

- **Student success:** Increase student opportunities in STEM through the improvement of technology, professional development and the creation of an endowment fund (developed to assist with sustainability).

- **Student transfer:** Create model transfer and articulation agreements with four-year institutions to encourage students to pursue extended study in STEM fields and develop on-campus support for these transfer students.

Strengthening STEM will have significant impact, including: an increase in the number of STEM-enrolled students at OJC, an increase in students in grades 6-12 who are benefiting from outreach activities, an increase in retention among STEM students and an increase in the number of students who are successfully transferring to four-year institutions in STEM. Tools being put into place through this grant that will assist in its success include additional direct-to-student services (through tutoring and transfer assistance), the development of new STEM courses, increased professional development opportunities for faculty, improved on campus technology designed to support higher technology courses and an improved endowment fund that will be used to address sustainability in the long-term.

ILLINOIS

Northeastern Illinois University - P031C080027

Activity Description:

Northeastern Illinois University (NEIU), a Hispanic-serving institution, proposes to create a new interdisciplinary Student Center for Science Engagement which will provide Hispanic and low-income college students a comprehensive set of services to retain and support them in the successful completion of their bachelors degree. The program will focus on both competitive preference priorities of the CCRAA, by significantly increasing the number of Hispanic and other low-income students attaining degrees in the fields of Biology, Chemistry, Computer Science, Earth Science, Mathematics and Physics; and by enhancing our transfer and articulation agreements with the two-year Hispanic-serving institutions in NEIU's geographic community in order to increase the number and preparation of students seeking majors in these fields.

This project will allow NEIU to develop and improve the capacity to serve Hispanic and other low-income students for years to come. The center will integrate effective teaching strategies and practices that research shows are effective in encouraging learning, persistence and retention. By updating labs and facilities, providing faculty development, enhancing academic support and mentoring, creating learning environments that encourage social integration, and by enhancing student-faculty interaction, it is anticipated that the outcomes will be achieved and will be sustained. This major initiative draws upon the past successes of the NEIU effort to support the Hispanic community it serves.

NEW JERSEY

New Jersey City University - P031C080208

Activity Description:

Improving the Success of Community-College Graduates Seeking to Complete Baccalaureate Sciences Degrees

New Jersey City University (NJCU), located in Jersey City, is New Jersey's only four-year, public Hispanic-serving institution.

The project design is informed by a genuine need among these students, and by NJCU's mission of access and excellence in an urban university with a diverse student population, as outlined in NJCU's current strategic plan, *Vision 2010*. The goals of this project are to: (1) Increase the number of science majors at NJCU; and (2) improve the persistence, retention and graduation rates of science majors at NJCU. These goals will be achieved through the implementation of the following two activities:

Activity One: Increasing enrollment through capacity-building within NJCU's science major programs. NJCU will increase its capacity to educate incoming "completer" students through: (1) increased and improved capacity for teaching laboratory sciences; (2) curricular revision and alignment, both across the NJCU science departments and with the "feeder" community colleges; and (3) standardization and dissemination of science department websites. We expect to attract significantly more NJCU science majors by attracting additional "completer" students. Curricular alignment will reduce curriculum-centered obstacles for entering "completer" and other student populations at NJCU, and increase the student persistence in science programs at NJCU.

Activity 2: Improving persistence, retention and graduation among science majors at NJCU. Through: (1) cohort-tracking of "completer" students with the Student Early Alert System© (SEAS); (2) supplemental instruction for "completers" in upper-level science courses; (3) Science-specific advisement for entering "completer" students; and (4) opportunities for "completers" to participate in mentored research and scientific meetings, NJCU will improve retention and graduation rates of science major "completer" students. The SEAS, an innovative and powerful student tracking system developed specifically for NJCU, will be used to track the progress of all "completers" within science courses and supplemental instruction, and to communicate academic progress issues with "completers" on an ongoing, formative basis. Improved student success and persistence will increase the number of students who remain in and eventually complete science programs at NJCU.

Passaic County Community College - P031C080139

Activity Description:

Passaic Partners for Stem Innovation and Achievement

Passaic County Community College (PCCC) is the only two-year, public, open-admissions institution in Paterson, the third largest city in New Jersey. Accredited by the Middle States Association of Colleges and Schools, PCCC serves over 7,000 students, a predominantly low-income, Hispanic and minority student population.

Facing low enrollment, completion, and transfer rates in its STEM transfer degree programs (computer information systems, engineering, mathematics, and science), the college has established a partnership committed to moving students along key transition points in the STEM pipeline, beginning in 10th grade and continuing through the Bachelor's degree. The project partners include seven local high schools and academies serving primarily Hispanic and low-income students and five colleges and universities in northern New Jersey.

To improve student success, the project will implement three essential components: (1) a K-12 outreach component that involves high schools students in hands-on collaborative learning and dual enrollment activities to better prepare them for postsecondary education; (2) a STEM improvement effort on the PCCC campus that engages students in their STEM learning and provides them with the academic and personal support needed to persist, especially in that critical first year of study; and (3) an initiative to facilitate student transfer to the university by aligning curriculum in STEM disciplines across the various levels of education, guiding students from high school to the community college to the university.

NEW MEXICO

Clovis Community College - P031C080051

Activity Description:

Clovis Community College (CCC), located in Clovis, New Mexico, is a public two-year institution serving some 4,000 students a semester, over 28 percent of whom (33 percent of full-time equivalent) are Hispanic.

The purpose of this proposal is to upgrade existing laboratories, increase lab space, increase technology applications, and add faculty to improve quality, increase enrollment, and expand the breadth of STEM education. CCC will also develop an outreach program to area public schools, whose students are over 50 percent Hispanic and 54 percent low-income, offering professional development for teachers and working to improve college readiness of students while increasing their awareness of opportunities in STEM fields. The project will increase STEM enrollment at CCC and STEM major transfers to baccalaureate and graduate degree granting institutions. By the end of the project, CCC math and science enrollment will be at least 15 percent higher than in fall 2007; success rates in college-level math and science will be at least five percentage points higher; and transfers from CCC to Eastern New Mexico University in STEM fields will increase by at least 33 percent over the 2005-2008 average. Capacity-building activities will support long-term expansion of STEM curricula and enrollment, and increased endowment dedicated to STEM education will help sustain these improvements for years to come.

New Mexico State University-Carlsbad - P031C080038

Activity Description:

New Mexico State University-Carlsbad (NMSU-C) is a public, open-door, comprehensive community college and Hispanic-serving institution in Carlsbad, New Mexico. Founded in 1950 and now an independently accredited branch campus of NMSU-Las Cruces, NMSU-C pursues its mission "to provide access to quality education opportunities and to support the economic and cultural life of the people of southeastern New Mexico."

Southeast New Mexico is very rural; the only towns of any size are Carlsbad (population 25,410), Roswell, and Hobbs, all 70 or more miles apart. Nonetheless, there is a vital STEM presence here. Los Alamos and Sandia National Laboratories and a host of public and private concerns employing engineering and information and communication technology professionals compete for too few qualified employees, and economic development is limited by a dearth of technical personnel. To help close the gap between demand and supply, NMSU-C proposes a project entitled *Stairways to STEM Success,* which responds to both CCRAA Competitive Preference Priorities, to increase Hispanic and other low-income STEM graduates and develop model transfer and articulation agreements between two- and four-year institutions in STEM fields.

Stairways will develop three new A.S. degree programs in pre-engineering, engineering technology, and information and communication technology, renovate and equip labs to support them, and provide academic support (self-study resources and tutoring) for their enrollees. We also propose to develop model articulation agreements with New Mexico State University-Las Cruces and the University of New Mexico in Albuquerque, both prominent four-year research institutions, for students' transfer into 2 + 2 BS programs in all three areas.

Stairways will also help close the gaps that NMSU-C has faced in graduating STEM professionals: Although interest in STEM careers is high and 47 percent of students in STEM classes are Hispanic, no students have declared STEM majors or graduated with STEM degrees in recent years. Institutional fiscal constraints are responsible: labs are outdated and inadequate, course offerings are limited, and no degree programming in the targeted fields exists at all. Additionally, the majority of NMSU-C's students come underprepared for college-level work (e.g., 85 percent require remediation in math), and 58 percent of our STEM students are also enrolled in developmental courses. Struggling with the rigors of STEM coursework, STEM students' mean GPA is lower than all students, and 30 percent of STEM students have GPAs below 2.0.

Northern New Mexico College - P031C080057

Activity Description:

"Transforming Northern's STEM Capabilities," will move Northern New Mexico College substantially forward in its development into a regional university. Only recently a community college, Northern New Mexico College has added new STEM baccalaureate programs (including biology, environmental science and information technology). This project will strengthen each and enable the college to add B.S. programs in mechanical engineering (renewable energy) and mathematics.

The project's sweeping, comprehensive strategy will focus on: (a) the addition of critical laboratory and research capacity in biology, environmental science and chemistry; (b) B.S. program enhancements in the mechanical engineering program and a new baccalaureate program in mathematics; (c) STEM articulation and transfer efforts with regional community colleges to strengthen the pathways into our STEM B.S. programs; (d) research and curriculum activities designed to increase STEM faculty and student research and strengthen STEM students' technical writing skills; and (e) support for STEM teaching faculty in achieving a terminal degree.

The project will have measurable and significant outcomes, such as a significant increase in the number of Hispanic and other students entering and succeeding in STEM B.S. degrees; increases in the number of students enrolled in STEM courses; sustainable numbers of students in new B.S. programs; greatly expanded research activity and grants-seeking by STEM faculty; significant improvement in student academic performance, retention and graduation rates in STEM fields; and an increase in the number of doctoral-level teaching faculty.

The Regents of the University of New Mexico-Taos - P031C080114

Activity Description:

Water & Natural Resource Information Systems

In response to under-representation of Hispanics and Native Americans in the STEM fields, congruent to CCRAA-Title V priorities and objectives, and meeting community needs, the University of New Mexico-Taos (UNM-Taos) has developed a unique and progressive initiative to apply the knowledge of the STEM fields through our faculty and field interns in providing educational information and technical assistance to our surrounding, predominantly low-income Hispanic communities on the many aspects of land tenure/use and water both in terms of quantity and quality.

Water will surpass oil as the most important issue in the southwest and the nation, and the watersheds of northern New Mexico play a prominent role in the development and future of the area. Historically, water rights are appurtenant to the land and almost a third (33 percent) of the entire watershed is owned by low income Hispanics and Native Americans. The historical significant ownership of water by Native American and Hispanics in northern New Mexico and the increasing competition for water in light of scarcity and contamination creates a sense of urgency but also provides an ideal opportunity for UNM-Taos to apply STEM technical knowledge in service of the community. While increasing the number of low income and Hispanic students graduating in STEM disciplines, this project will establish an educational information clearinghouse for historical and state of the art spatial data systems, as well as mobile field learning labs and methods of dissemination of resources and findings to our surrounding communities.

UNM-Taos has formed a consortium with Taos Pueblo, Hispano aqua associations, water and natural resource federal and state agencies with the objective of improving access and success in STEM careers focusing on technology based curricula and experiences in water and natural resource information systems. Public lands occupy almost 85 percent of land in Taos County and our students have grown up in these areas. North central New Mexico is a tri-cultural region undergoing vast economic and demographic changes resulting in great disparities of wealth and well being. Increasing representation of Hispanics and Native Americans in STEM careers will provide local youth greater professional employment opportunities in the STEM career pathways. State and federal natural resource agencies will benefit by having greater staff diversity as well as being able to draw upon the talents of youth familiar with the public lands in their community.

Regents of the University of New Mexico-Valencia County Branch - P031C080092

Activity Description:

The University of New Mexico-Valencia Campus (UNM-V) is a two-year, public college of the University of New Mexico System. Established as a branch campus in 1981, the institution functions as a regional community college.

Activity 1: To significantly increase the number of Hispanic and other low income students attaining associate degrees in STEM fields, and to increase the percentage of Hispanic and other low-income STEM students transferring to the UNM-Main Campus by developing and implementing a model branch articulation and transfer program between UNM-V and UNM-Main Campus. We propose to increase the Hispanic and low income student graduation rate in STEM fields by 20 percent over two years and the Hispanic and low-income transfer rate in STEM fields to UNM-Main Campus from 13.4 percent to 18 percent, both by the conclusion of the grant.

UNM-Valencia plans to achieve this goal in the following ways:

Increase overall graduation rates for STEM degrees by implementing a University Success Course for STEM majors with an emphasis on career opportunities in STEM fields and by upgrading classroom technology to include Smartboard® equipment in science, math and digital arts classrooms as well as Classroom Capture Technology in all classrooms.

Increase overall success rates in STEM gateway courses through curriculum development, intensive training to promote more effective teaching methods, introducing supplemental instruction to all sections of these courses, and increasing full-time faculty in these courses.

Implement a model articulation and transfer program from UNM-V to the UNM-Main Campus by hiring a full-time STEM senior academic transfer advisor to assist Valencia transfer students in overcoming barriers to success at the UNM-Main Campus.

NEW YORK

Borough of Manhattan Community College - P031C080210

Activity Description:

Borough of Manhattan Community College (BMCC) is one of nineteen units comprising the City University of New York. Located in one of the fastest growing regions in the City of New York (Tribeca), BMCC currently serves more than 24,000 students in its credit (18,200) and noncredit (6,000) programs making it the largest community college in the University. Located in the heart of New York City's financial district, the communities served by the college extend far beyond the Wall Street - City Hall area. Students commute to BMCC from each of the city's five boroughs and are drawn to the college because of its commitment to academic excellence, flexible scheduling options and the comprehensive educational services afforded its student body. Notwithstanding the large growth in enrollment among community colleges nation-wide over the past twenty years, significant gaps continue to exist in the rate at which students are retained and graduated, especially among Hispanics in the STEM disciplines and engineering in particular.

Although Hispanics have made modest improvements in educational achievement during past decade, they continue to make only marginal gains in terms of their presence in the STEM workforce. At BMCC, where the vast majority of its student population is comprised of minority groups, many of whom are academically underprepared, these findings have heightened importance. The proposed Title V CCRAA initiative will improve the access of undergraduate minority students to careers in the engineering by effecting long-range improvements in science education at BMCC.

The project's is comprised of seven integrated activities, which include:

Pre-Freshmen Engineering Program, curriculum redesign of courses in engineering, student research, faculty development, peer mentoring, supplemental instruction and upgrading of outdated lab facilities.

LaGuardia Community College - P031C080028

Activity Description:

"Promesa" (Promoting Math Excellence and Science Access)

LaGuardia Community College's mission focuses on providing access to higher education, particularly for traditionally underserved students – and translating that access into success. LaGuardia has been a gateway to college for thousands of students – immigrant, Hispanic and other minorities, low-income, and first-generation college. LaGuardia's award-winning instructional and academic support programs have resulted in higher first-year retention and graduation rates than the national community college averages.

Yet, the college has not been able to graduate large numbers of Hispanics and low-income students with degrees in science due to three institutional weaknesses that will be addressed through *Project Promesa*: (1) mathematics – a fundamental prerequisite for science study – remains a formidable challenge for LaGuardia's Hispanic and low-income students; (2) the college does not offer any specific science majors; and (3) the college's science facilities are inadequate and antiquated, limiting the faculty's ability to implement pedagogical improvements.

Project Promesa will address these needs through a faculty development program designed to adapt a proven approach for higher-level math instruction to "basic skills" math at the community college level; the creation of two new STEM degrees (biology and environmental science) along with a model transfer and articulation program; and significant enhancement of the college's science lab facilities that will afford Hispanic and low-income students opportunities for hands-on, inquiry-based science learning.

Vaughn College of Aeronautics and Technology - P031C080012

Activity Description:

Encima y Más Allá – Above and Beyond for Hispanic STEM Degree Completion

Vaughn College of Aeronautics and Technology was established over 75 years ago in Queens, New York, then as a training school for aviation technicians serving LaGuardia Airport. As the aviation industry has shifted and changed to reflect advances in technology and the global marketplace, Vaughn has had to adapt its mission to become a fully accredited college with a mission to produce well-educated graduates for the 21st Century workplace in high demand aviation and related advanced technology industries.

The Encima y Más Allá project goals and objectives address the first priority of the CCRAA grant program to increase the number of Hispanic and other low-income students attaining degrees in the STEM fields by the development of an effective First-Year Experience (FYE) for Vaughn students, the vast majority of whom are enrolled in STEM programs. While 93 percent of our graduates are employed upon graduation, too many students do not persist to complete their degrees. National research indicates that the critical missing link in Vaughn's transformation into an effective Hispanic-serving institution is a college-wide program to increase student "engagement" in learning, beginning as early as possible. Through this CCRAA project, Vaughn will develop an Early Connection to Vaughn College (ECVC) bridge program and FYE, which engages faculty, support staff and students in the success of our students in the critical first year of college. STEM faculty development, STEM-related infrastructure improvements and resource development strategies are included to further strengthen and sustain our STEM programs.

Working with our two-year HSI articulation partners, Cochise College (Arizona) and Taft College (California), Vaughn will develop an innovative articulation and transfer agreement which will provide low-income, Hispanic students from these rural colleges a unique opportunity to transfer, with a full-ride scholarship, into Vaughn's bachelor's degree program in mechatronics.

PUERTO RICO

Bayamon Central University - P031C080151

Activity Description:

Institutional Profile: Located in Bayamon, Puerto Rico, Bayamon Central University (BCU) is a private Master's Level I coeducational liberal arts institution affiliated with the Roman Catholic Church and founded by the Dominican Order in 1961. The student body is 100 percent Hispanic. The total 2007 undergraduate enrollment was 2,825 (1,911 full-time and 914 part-time). BCU offers seven associate degrees, 37 baccalaureate and 14 master's degree programs. In keeping with the Dominican philosophy, the BCU mission is to provide access to postsecondary education for at-risk, low-income Hispanic students, offering a solid liberal arts education and degree options in high-demand professions of business administration, technology, natural science, teacher education, social work, and nursing.

The San Alberto Magno Science Center classrooms and laboratories have visibly deteriorated within the last twenty years without the benefit of repair due to budget constraints and high cost to update equipment and provide modern lab instrumentation. As STEM enrollment dwindles so does revenue, which is 75 percent dependent on tuition and fees; thus, addressing the problem is delayed. Advising and academic support services do not provide the degree of support needed for the majority first-time entering students who are underprepared (64 percent) and first-generation college (85 percent). Consequently, STEM students are losing ground. The participation and persistence statistics are startling testimonies of the magnitude of the problem:

- *The number of STEM bachelor's degrees awarded at BCU has dropped by* 51 percent *since 2004.*
- *Only* 27 percent *of the fall 2000 STEM declared majors at BCU persisted to degree within six years.* - *Only* 4.5 percent *of the BCU student body declared STEM as a major (fall 2007).*

Activity: *Strengthening the STEM Education Pipeline for Low-Income Hispanic Students*

BCU proposes to repair and strengthen the STEM education pipeline for Hispanic and low-income students by developing: (1) adequate resources for STEM curricula (updated facilities and modern lab instrumentation); (2) proactive advisement and academic support for STEM declared majors and two-year college transfer students; and (3) articulation agreements with the partner two-year college (Huertas Junior College), including vertically aligning general education science curricula between the two institutions.

Humacao Community College - P031C080129

Activity Description:

Located in Humacao, Puerto Rico, Humacao Community College (HCC) is an independent, nonprofit, two-year college with a 100 percent Hispanic student body and faculty. The total enrollment for fall 2007 was 651 (516 full-time and 135 part-time). HCC offers nine occupational degree and four certificate programs. The college is accredited by the *Accrediting Council for Independent Colleges and Schools* (ACICS) and the *Council of Higher Education (CHE)* of Puerto Rico and governed by a five-member Board of Trustees. The mission of HCC is to *"prepare youths and adults through educational means of excellence that promote their whole development and their effective performance in the occupational world."*

CCRAA Activity: *Building a STEM Pipeline for Low-Income Puerto Rican Students*
HCC proposes to increase access to the STEM education pipeline for Hispanic and low-income students by developing a high-demand biotechnology technician associate in applied science degree program and a biotechnology A.A.S. to Bachelor's of Science ladder with Inter American University in Puerto Rico - Bayamon: (1) developing adequate resources for science curricula (adding and equipping STEM classrooms and laboratories and acquiring adequate library and teaching resources); (2) developing transfer advisement/support for STEM declared majors, including the addition of a STEM advising/transfer center; and (3) developing a model articulation agreement with the partner four-year college, including aligning the HCC general education math and science curricula with the four-year college curricula for a seamless transition for transferring students.

Inter American University of Puerto Rico, Barranquitas - P031C080082

Activity Description:

Recruitment and Retention in Science and Technology by Improving Curriculum, Updating Laboratory, and Multimodal Learning

The goal of this project is to improve and expand institutional capacity of Inter American University of Puerto Rico, Barranquitas Campus (IAUPR-BC) to serve Hispanic and other low-income students in the areas of life sciences (B.S. in biology and B.S. in biotechnology), B.S. and A.S. in computer science, and engineering. This goal will be accomplished by: (1) Increasing the percentage of students entering into the Science and Technology Department at IAPR-BC by 50 percent; (2) Increasing in 50 percent the retention rates of students in the Science and Technology Department at IAPRBC at IAUPR-BC from the first year through the second year by means of student services, such as counseling and the Multimodal Learning Center; (3) The implementation of a transfer and articulation agreement in Engineering between IAUPR-BC and Inter American University of Puerto Rico Bayamón Campus (IAUPR-BY); (4) Strengthening IAUPR-BC curriculum in science and technology, through curriculum articulation and updating laboratory activities using problem based learning; and (5) Updating science laboratories to implement hand-on and problem solving based learning and undergraduate research. Therefore, the main outcome of this project will be the increase in retention rate and the number of Hispanic and other low-income students attaining degrees in the fields of science and technology at IAUPR-BC.

Universidad del Este, Carolina - P031C080085

Activity Description:

The ASSI Project

Closing Academic, Support Services and Intervention Gaps to Increase Retention and Success of STEM Programs Students UNE-Carolina CCRAA Individual Grant Proposal, a single comprehensive integrated project, has the overarching objective of increasing the number of students attaining degrees in STEM fields by academically and affectively strengthening its enrollment toward a successful completion of a degree.

Critical needs affecting UNE-Carolina STEM programs students are as follows:
(1) High failure rates in mathematics, English and Spanish courses requirements;
(3) Insufficient proactive student support to satisfy academic and educational needs, promote college integration and provide continuous services and timely interventions;
(4) Insufficient course instructional assessment processes integration at classroom and at administrative level; and
(5) Inadequately prepared faculty to promote student success and retention.

The proposed project will accomplish its objectives by: providing STEM students the services and resources that will enable them to succeed in their courses, adapt to college life and persist to graduation; promoting the integration of course instructional and institutional assessment processes into math, English and Spanish STEM courses to monitor effectiveness of learning; increasing training and access to information and communication technologies and providing for STEM students; promoting the integration of alternative instructional methodologies, course assessment techniques and integration of technology by implementing a Faculty Instructional Development Institute (FIDI) and personalized one to one sessions.

Universidad del Sagrado Corazón, San Juan - P031C080198

Activity Description:

The CCRAA project aims to motivate and support high school graduates admitted to the Universidad del Sagrado Corazon (USC) to pursue a STEM B.S. degree. The intent of the proposed initiative is to ensure that no talented Hispanic or low-income student will be denied the opportunity to pursue studies at the baccalaureate level, gain access into the science fields, and pursue graduate education in science because of a lack of support services. This vision is embodied in the institution's mission statement and subscribed by the faculty and staff who have chosen to participate in this project. Current outreach and dissemination strategies will be enhanced to improve recruitment of new science majors so that by September 2010, 30 new STEM students will have been successfully recruited and pipelined into the science programs at USC.

USC is a 100 percent Hispanic-Serving Institution with a significant percentage of low-income students (66 percent), also serving a substantial female population. Spanish is the language of instruction although English is required, taught, and used extensively throughout all courses and disciplines.

USC recognizes the national need to strengthen our economy, retain and expand advanced STEM based industries, provide well paying jobs for our work force, maintain and expand national competitiveness in the new science based economy. To achieve these goals, the nation needs to increase the number of students entering STEM fields, and to increase retention and graduation rates of Hispanics and other minorities and low-income students in these fields. Thus, USC plans to identify and implement up-to-date teaching/learning strategies and curricula that address student needs; increase high school students' interest and competence in STEM; advance undergraduate student and faculty research skills and experiences; increase retention and graduation rates of USC's STEM students; and advance the professional development of faculty. These steps are viewed as critical elements in our efforts to address the under representation of minority students, particularly Hispanics, in the sciences.

Universidad Politécnica de Puerto Rico, Hato Rey- P031C080209

Activity Description:

Title: **Increasing the five year graduation rate at Universidad Politécnica de Puerto Rico through transformative change in engineering curriculum and the addition of support and materials**

Studies from the National Science Foundation show that minorities and women, who have a more hands-on approach with the engineering curriculum at an earlier time during their five-year tenure, will more likely graduate. With this knowledge, **Universidad Politécnica de Puerto Rico** (UPPR) researched ways to increase the five-year graduation rate at UPPR.

Goal 1: To increase the five-year graduation rate of students in the College of Engineering and Geomatic Science. Outcome: The graduation rate will increase by twenty percent in five years, as measured and/or shown by university graduation records.

UPPR is a commuter college, in that there are no dorms. Therefore, UPPR will be able to attract more students by developing a distance education online program. Also, a distance education program will be developed in order to collaborate with other higher education institutions.

Goal 2: Engineering support personnel and materials will be added to assist Hispanic and/or low income Engineering Students.

Two academic advisors and two engineering mentors will be hired to assist Hispanic and/or low-income engineering students. This specialize assistance will help Hispanic students to graduate within five years.

Goal 3: Updating technology and materials in the engineering laboratories and Technical Support Lab, as per Accreditation Board for Engineering and Technology (ABET) standards.

As per recommendations from ABET, technology and materials in each of the labs from the nine departments in the College of Engineering need to be upgraded and added so that the student-to-materials ratio is less.

TEXAS

El Paso Community College - P031C080207

Activity Description:

El Paso Community College STEM Labs for Early College High School

El Paso Community College (EPCC) is a Hispanic-serving institution. We have five campuses in El Paso County, serving a population that is nearly all Hispanics, many of whom are low-income. While many efforts have been made to improve the number of fair-paying jobs, the people that we serve are at a disadvantage to perform in prevailing new jobs because our people are not well-trained, particularly in those jobs that require a knowledge and experience with skills embedded with science, technology, engineering, and math abilities. To respond to this situation, EPPC is adding two new STEM College High Schools (ECHS) at our Trans-mountain and North West Campuses, where we will partner with the El Paso and Canutillo Independent School Districts.

With the support of the College Cost Reduction and Access Act, we will upgrade our current lab facilities, articulation agreements, and support services within a 24-month period, starting in November of 2008 and ending in September of 2010 to meet this timely and needed demand. Our ***goals*** are to: (a) increase the number of Hispanic students enrolling in STEM fields; (b) increase the number of EPCC students that transfer to four-year institutions in STEM fields; (c) transform, renovate, and upgrade existent STEM facilities at the Trans-mountain and North West Campuses; and (d) improve the STEM academic and support services at the two target campuses. To achieve this we have developed a ***process*** that is well-planned, builds on existent relationships with the target school districts and the University of Texas at El Paso, will be closely monitored and evaluated, and is achievable in the time period proposed.

Mountain View College - P031C080182

Activity Description:

Mountain View College (MVC) is a public, two-year degree-granting college that currently (spring 2008) serves 6,700 students (**48 percent Hispanic** / 29 percent African-American) in economically disadvantaged southwest Dallas County. Low or non-existent interest in STEM fields of study, few linkages with other educational institutions, lack of STEM relevant career opportunities and an annual budget that is vulnerable to fluctuations in enrollment are among the problems facing this 38-year old minority-serving institution. In that context, STEM Infrastructure represents an aggressive approach to creating a collaborative, STEM-focused and student-centered program to: (1) increase the number of Hispanic and other low-income students attaining degrees in a STEM field; and (2) to develop model transfer agreements between MVC and area four-year institutions.

The STEM Infrastructure program design satisfies both competitive preference priorities with a focus on activities that propose to increase the number of Hispanic and other low income students attaining degrees in a STEM field of study and the development of an innovative STEM-focused infrastructure resulting in model transfer and articulation agreements between MVC, the University of North Texas and the University of Texas at Arlington. STEM Infrastructure, a 24 month program (60-month evaluation plan), is designed to provide future and current students with STEM-focused curricular alignment and student-centered instructional practices while creating linkages between educational institutions and developing engaging STEM-focused programs of study.

Activity One (STEM Skill Development) - Develop co-institutional STEM connections and provide an infrastructure of STEM academic support for Hispanic and low-income students.

Activity Two (STEM Course Development) -. Program and curriculum development for an Engineering Science Program and an Air Traffic Control Program.

Activity Three (STEM Evaluation, Dissemination and Publication) - Implementation of comprehensive evaluation framework, improved access to best practices developed and dissemination of programmatic achievements.

Odessa College - P031C080147

Activity Description:

Odessa College (OC) located in the flatlands of West Texas known as the Permian Basin, opened its doors in 1946 with 186 students. Since that time, this Hispanic-serving institution has grown to serve a student body in excess of 4,500 each year. The college's state designated service area includes 13 contiguous, predominantly rural West Texas counties bordering New Mexico and encompassing more than 33,800 square miles. Within this region, 47 percent of residents are Hispanic, poverty rates are high (17.7 of all residents; 25.3 percent Hispanic), and educational attainment is low. More than 24 percent of adult residents (36 percent Hispanic residents) have not completed high school and just 18 percent have a baccalaureate degree (four percent Hispanic).

Like the residents it serves, OC has endured the ups and downs of a rollercoaster economy largely dependent on the oil and gas industry. We have watched our regions disadvantaged residents lured into a false sense of security by well-paying (but temporary) jobs in the oil fields when the economy is at a high point. A short while later these residents often find themselves out of work, without adequate education credentials, and without any transferable skills. We submit this CCRAA application with intent of creating an avenue for increased opportunities for our Hispanic and low-income students so that they may have the appropriate skills and credentials to rise above the confines of menial labor and join the ranks of the well educated engineering workforce in the region.

Our *Pathways for Hispanic Engineers in West Texas* project will create a pre-engineering degree tract at Odessa College and develop an articulation agreement Texas Tech University (located 120 miles away in Lubbock, Texas) to facilitate and encourage two-year to four-year transfer of our students.

Palo Alto College - P031C080173

Activity Description:

San Antonio, Texas, emerged after the 2000 Census as one of the largest, fastest-growing and most Hispanic cities in the nation. San Antonio is now the seventh largest city in the United States (population of 1,144,646). **San Antonio is also a poor city**. Approximately ***17.3 percent of San Antonio residents live in poverty*** compared to 15.4 percent for the state and 12.4 percent for the nation**. Serving the disadvantaged population is Palo Alto College (PAC).** Palo Alto College, served a student population of 8,021 in fall 2007 of whom 65 were Hispanic, 74 percent were first-generation college students and 49 percent were classified as economically disadvantaged. Student indicators are troubling. At Palo Alto College, **56 percent of entering first-time-in-college students also do not graduate**. **The six-year graduation rate for the first-time-in-college freshman cohorts was 21.3 percent** from 1999 to 2005, and only **15.8 percent of entering Palo Alto College students' transfers to a public university.**

Palo Alto College proposed ***MOTIVE*** **(Motivating Opportunity to Involve Valuable Education)** which translates to **MOTIVATE** in Spanish**: (**1) **Professional development** for PAC STEM faculty (and surrounding high schools STEM teachers); (2) Hire two science lab technicians III, one application analyst/programmer position, 10 math and science tutors, one STEM curriculum consultant and support two to four faculty-visiting STEM scholar's to improve services in STEM fields; hire seven student " STEM Peers Helping Peers Succeed" – STEM Peer Advisors in different STEM-related fields to **mentor college students and promote the STEM fields; (**3) Palo Alto College will significantly **increase the amount of external funding available for STEM student scholarships and program development through an endowment**; (4) Palo Alto College will significantly **improve STEM faculty development resources through the upgrading two science labs at PAC and the creation of a Science Exploration Laboratory Center; (**5) **Strengthen STEM partnerships by improving graduation, and transfer rates of underrepresented minority students in STEM fields** by modifying current articulation agreements between PAC and the University of Texas at San Antonio and Texas A&M University.

South Texas College - P031C080202

Activity Description:

South Texas College is a public institution of higher education meeting the diverse educational and workforce needs of the people of Hidalgo and Starr counties. The college's vision is a better quality of life for its communities. The college's core values are student success, excellence, integrity, community and opportunity.

This project simultaneously attacks *regional independent school district weaknesses in exit math success rates;* and reinforces aggressive *South Texas College STEM degree attainment efforts.*

Although South Texas College (hereinafter also referred to as STC or College) makes *college readiness* a focus issue through its *Annual Summit on College and Career Readiness* and through its developmental studies program, the fact remains that most of the students enrolling at STC are not college-ready. STC enrollment of students underprepared in math is averaging approximately 70 percent. Upon enrollment into South Texas College, these students must take a recommended sequence of developmental math courses before they can continue to more advanced college-level academic work. This project will focus on the math failure rate through a reinforcement of the college's Developmental Math Studies Program. Specifically, the proposed Project will implement the recommendations of the college's *Developmental Math Task Force*, which has been developing strategies to combat this problem.

The true measure of success for this project's STEM expansion component is not how many students enroll each year, but instead, how many students complete their courses each semester and graduate with specific STEM degrees. The project's specific measurable goals of the STEM expansion component are based on two student groups of 140 each being served by the project, or a total of 280 students aiming at a STEM degree. The goal is to double the total number of students attaining STEM degrees by the end of a three-year time frame, compared to the latest baseline data in fall 2008. In fall 2007, there were 171 STC STEM degrees awarded. This means that the project would have to achieve at least a 61.1 percent success rate with its 280 students based on fall 2007 data.

Sul Ross State University - P031C080199

Activity Description:

Sul Ross State University (established 1917), a charter Hispanic-Serving Institution, is a small, public, regional comprehensive university located in rural West Texas that serves just over 1,800 students. The SuI Ross campus in scenic Alpine, Texas, is gateway to "Big Bend Country," a crucible of cultures: Native American, Spanish, Mexican, and Anglo. From the slowly winding Rio Grande River to the vast expanses of the Chihuahuan Desert and Davis Mountains, the culturally rich but impoverished people along the 1,200-mile Texas-Mexico border have historically looked to Sul Ross for a new way of life. Virtually all of our students (49 percent Hispanic) come from this economically and educationally disadvantaged population. While Sul Ross is committed to fulfilling its comprehensive mission of access and success for area residents, funds have not been available to resolve documented gaps and weaknesses in services and infrastructure, which threaten our ability to effective serve our students, particularly in promising STEM fields. The purpose of the proposed CCRAA project, "Inspiring Achievement in STEM," is not only to increase Hispanic and other low-income students' attainment of STEM degrees, but also to enlarge the STEM higher education pipeline by developing model transfer and articulation agreements with area two-year colleges (South Plains College and EI Paso Community College). The project will replace outdated science, technology and math lab equipment, develop pro-active academic support, establish two STEM Transfer Centers and provide faculty development in instructional techniques utilizing new equipment and technology and in teaching learners from diverse backgrounds.

Texas A&M International University - P031C080083

Activity Description:

Texas A&M International University (TAMIU), a Hispanic-serving institution located in Laredo, Texas, proposes a College Cost Reduction and Access Act (CCRAA) Individual Development Grant project to establish an innovative recruitment and retention program that will increase the number of Hispanic and other low-income minority students pursuing degrees in science, technology, engineering, and mathematics (STEM).

Activity: STEM Recruitment, Retention and Graduation (STEM-RRG)
The purpose of the project is to strengthen academic offerings and program quality and increase the number of Hispanic and other low-income minority students attaining degrees in STEM fields by: (1) Developing a STEM Recruitment and Enrichment Program; (2) Establishing a Pre-Engineering Cohort; (3) Establishing a Mathematics Education Cohort; (4) Creating an endowment that will provide Hispanic and other low-income STEM students a continuous source of scholarships; (5) Providing STEM research experience to enhance student retention; (6) Developing a mathematics enrichment program; (7) Creating a college algebra support program; (8) Providing faculty development in the areas of curriculum design, working with diverse populations, assessment and instructional strategies; (9) Developing a model transfer agreement and student advising; and (10) Offering counseling support services.

Texas A&M University-Corpus Christi - P031C080033

Activity Description:

Texas A&M University-Corpus Christi (TAMUCC) located in Corpus Christi, Texas, seeks a Title V CCRAA (College Cost Reduction and Access Act) grant in order to: (a) increase the number of transfer and first-time-in-college (FTIC) students who will seek a baccalaureate degree in STEM disciplines; and (b) design and improve an articulation and joint advising agreement with Del Mar College that will help increase the number of transfers from Del Mar College to TAMUCC who will seek baccalaureate degrees in STEM areas. Four goals, eight objectives, and four components provide the framework for this program.

This project has a four-pronged approach based on four goals. They are:

1. To increase the number of transfer as well as first-year-in-college students, especially Hispanics, who will succeed academically and obtain degrees in STEM areas of their choice. (The STEM Academic Support Services Component)
2. To increase the strength of the articulation, joint advising and transfer agreement between TAMUCC, and Del Mar College, through a renewed articulation agreement targeting transfer students majoring in STEM areas. (The Articulation Agreement Component)
3. To increase the quality of classroom instruction through a faculty development component aimed at providing enrichment experiences to enhance the pedagogical skills of faculty. (The Faculty Development Component)
4. To increase the quality and quantity of on-campus resources through a renovation of The Glasscock Building as an HSI STEM Center in order to provide academic support services for the STEM disciplines. (The Classroom Renovation Component)

Project services and activities include the following: For Component One, services to be provided include academic student support activities to include: (1) outreach to potential transfer and FTIC students to encourage them to pursue and persist in a STEM degree; (2) mentoring, advising and more intensive degree audits to increase stem majors; (3) intake of these students into a CCRAA cohort of transfers and FTIC students to be provided intensive services in STEM disciplines to include mentoring, tutoring, supplemental instruction, advising, student tracking, and a summer career and research exploration experience; (4) supplemental instruction and tutoring to increase the course persistence of students in challenging courses; (5) student tracking, mentoring and advising and follow up to increase the number of these students who will graduate with a baccalaureate degree in STEM disciplines. For Component Two: design of a new articulation agreement emphasizing the STEM disciplines through collaboration with Del Mar College. For Component Three, the creation of a STEM Faculty Development Program to provide a faculty skills development and enrichment series; and for Component Four, the renovation of a building into an HSI STEM Center for Student Success.

The University of Texas at Brownsville - P031C080205

Activity Description:

The University of Texas at Brownsville (UTB) is located in Brownsville, Texas, serves a student population of over 17,000, of which 93 percent are Hispanic. UTB's service area is among one of the poorest in the nation and is located on the border between Texas and Mexico in a region that boasts the highest concentration of Hispanics in the state.

The Science and Technology Educational Partnerships for Success (STEPS) project at UTB proposes to address the needs of the predominately Hispanic student population of the South Texas region through collaboration with three regional community colleges including South Texas College, Del Mar Community College, and Texas State Technical College. The STEPS project will: (1) enhance student transferability into bachelor level STEM fields and programs; (2) facilitate student support interventions to improve the transfer process and success rates of STEM students; (3) create additional attractive pipelines for science majors to take coursework in bioinformatics and computer forensics; (4) to improve existing laboratory facilities; and (5) create an endowment that will provide scholarships and incentives to bolster student persistence in higher educational pursuits. It is the intent of the STEPS project to increase enrollment of STEM majors at UTB through articulation, student support and focused advising, and to create an environment that connects students with the potential to succeed in science as a career.

This project will offer for the first time to students in the southernmost region of Texas interdisciplinary science degrees at bachelor levels in the emerging fields of computer security and forensics as well as bioinformatics. Enhancing current facilities to create state-of-the-art laboratories in these fields will support these fields. Thus, STEM students will be able not only learn to perform exploratory studies but also advance their knowledge in research.

The University of Texas of the Permian Basin - P031C080166

Activity Description:

Opportunities for Student Achievement and Transfer for a STEM initiative designed to achieve the following goals:

1. To increase the number of transfer students from area community college who enroll and graduate from the University of Texas of the Permian Basin (UTPB) in STEM disciplines.
2. To enhance mathematics and science achievement across the curriculum.
3. To enhance engineering instruction, pre-engineering enrollment and to obtain authority to offer the full four year engineering degree at UTPB.
4. To increase students' use and exposure to technology in STEM disciplines.

UTPB will align its mathematics curriculum with the area high schools and community colleges in order to achieve a more seamless transition into the university. Additionally, resources to build an engineering program, including laboratories will be purchased and implemented. Student support services, such as mentoring, tutoring and providing a UTPB STEM advisor on community college campuses will be will be offered to students. UTPB will increase its outreach to the community colleges, including pursuing specific STEM articulation agreements to add to the agreements already in place.

A math specialist will be employed to assist with changing the delivery of Pre-calculus and Calculus I as well as to assist students in developing the prerequisite skills needed to do well in their mathematics courses. This foundational math will enable students to succeed in all STEM disciplines, since math is fundamental to all of the Sciences and technology. Several laboratories to support engineering and computer science will be built and classroom technology will be purchased for several of UTPB's buildings.

The University of Texas at San Antonio - P031C080167

Activity Description:

Academy for Teacher Excellence (ATE): E3 (Equity, Education, Entrepreneurship) Pathways to Hispanic Students' Success

The University of Texas at San Antonio (UTSA), in collaboration with Northwest Vista College, requests funding to address the issue of low Hispanic participation and retention to prepare teacher candidates in the STEM areas and to enhance the STEM content, pedagogical, technological, and cultural knowledge and skills of bilingual, English as a Second Language (ESL), and special education teacher candidates. This will be accomplished by improving the capacity of UTSA to improve student success and to provide affordable high-quality educational opportunities for their students. UTSA's Strategic Plan 2016 supports the College Cost Reduction and Access Act (CCRAA) mission to provide funds for institutions for higher education (IHE) to address the competitive priorities and take actions that on a short term basis address obstacles to achieve its goals and institutionalize a process to achieve long term change of practices that become institutionalized throughout the educational pipeline.

Objectives: Objectives and outcomes are consistent with Government Performance and Results Act indicators and are clearly specified and measurable. Six major outcomes will guide the proposed project activities: (1) 100 Hispanic or other low-income students will be recruited and enrolled in UTSA's program for preparing STEM, bilingual, ESL or special education teachers; (2) Add 50 secondary teachers in the STEM areas and 50 elementary bilingual/ESL and special education teachers to reduce these shortage areas that disproportionately impact Hispanic and other low-income students; (3) 90 percent of Hispanic or other low-income minority students participating in the project (50 in a STEM area and 50 in a critical teaching shortage area including bilingual, ESL and special education) will successfully complete the first year in the program with at least a 2.5 grade point average (GPA) or higher; (4) 85 percent of Hispanic and other low-income minority students participating the second year will successfully complete the first two years with at least a 2. 5 GPA or higher; (5) Increase the number of Hispanics transferring from Northwest Vista College to UTSA by five percent each project year; and (6) 80 percent of Hispanic and other low-income minority students participating in the project will be fully certified to teach one of the STEM areas, or bilingual, ESL and special education.

University of the Incarnate Word - P031C080203

Activity Description:

University of the Incarnate Word (UIW), San Antonio, Texas. The overarching purpose of UIW's CCRAA project is to carry out activities that increase the number of Hispanic and other low-income students who receive a bachelor's degree in science, technology, engineering or mathematics (STEM). To address this purpose, this project will accomplish the following four objectives:

Objective 1: Increase the number of declared STEM majors by 3.5 percent, from a baseline of 734, in spring 2008, to 760 by 2010.
Objective 2: Increase average student pass rates in selected gateway STEM courses from 66 percent, in Academic Year 2007-2008, to 70 percent by 2010.
Objective 3: Increase student progression in STEM disciplines by two percent from a baseline of 73 percent in fall 2007, to 75 percent by 2010.
Objective 4: Increase the number of STEM classrooms and labs that satisfy national accreditation standards, from a baseline of 30 (out of 51) in 2008, to 40 by 2010.

These four objectives were formulated after a thorough assessment of national, state, community, and institutional needs. The project will fulfill these objectives by carrying out two activities supported by a series of tasks.

Several components of this project make it an innovative model for other Hispanic-Serving Institutions (HSIs). One of these is the focus on expanding articulation agreements in STEM with St. Philip's College (SPC), a two-year HSI here in San Antonio. To accomplish this expansion, faculty from UIW and SPC will work together to align curriculum in selected STEM courses and carry out joint activities between STEM faculty and students at both institutions. Another innovative component is the planning of faculty instructional development workshops that will focus on collaborative and cooperative learning strategies that research shows benefits minority students. The workshops will be held each summer of the award period for UIW and SPC STEM faculty and will include breakout sessions for group work and collaboration. A final innovative component is the emphasis on improving curriculum and teaching in introductory or so-called gateway STEM courses. These courses often "weed out" Hispanic and other students who initially major in STEM but who are not strong in mathematics or science. The gateway courses that this project will focus on are lower level mathematics and chemistry courses. Equipment and technology purchases are an important part of this project. These purchases will increase in the number of existing classrooms and laboratories that meet national standards in which Hispanic and other STEM students can conduct research and receive high-quality training.

FY 2008 CCRAA COOPERATIVE GRANTS

CALIFORNIA

California State University-Bakersfield - P031C080013

Activity Description:

Leveraging an Established Intersegmental Partnership to Provide an Accessible STEM Pathway for Hispanic Students in one of the Highest need Regions in America

California State University-Bakersfield (CSUB), the lead college in this collaborative project is the only four-year, public institution of higher education within a 100-mile radius of Bakersfield and currently enrolls over 6,000 undergraduates, 37 percent of whom are Hispanic. CSUB has joined forces with Bakersfield College (BC), the closest two-year HSI, to undertake a project which directly addressees the two priorities of the CCRAA STEM grant program. BC is an older, larger college with 15,000 students, about 45 percent Hispanic. Together CSUB and BC serve a region of California that is on the frontlines of the national crisis in Hispanic under preparedness for and under-representation in STEM degree completion. The K-12 system is at the bottom of the California system in student achievement/preparation for college.

Working closely with BC the project is planned to provide a seamless inter-segmental STEM pathway for Hispanic student success – the logical next step for CSUB in acting strategically to produce more Hispanic STEM graduates who will determine the future of the service area. **Project components include:** Collaborative STEM Outreach, Effective STEM Transfer and Articulation, Removing Specific Institutional Pathway Obstacles, and Developing a Model STEM Transfer and Articulation Agreement. The project has one overarching measurable objective which all components, strategies and activities were planned to achieve: **To increase, by 20 percent, the number of Hispanic students who enroll and transfer successfully from BC to CSUB to complete STEM degree programs.**

California State University, Monterey Bay - P031C080193

Activity Description:

California State University, Monterey Bay (CSUMB), a young and growing Hispanic-serving institution (HSI) with a deep commitment to underserved and underrepresented populations, will partner with Hartnell College, a HSI community college with 60 percent Hispanic enrollment, to achieve three goals. First, the partnership will increase the number of Hispanic and low-income students attaining Bachelor of Science degrees from CSUMB in the science, technology, engineering, or mathematics (STEM) fields. Second, the partnership will increase the number of STEM students transferring from Hartnell College to CSUMB. Finally, the partnership will develop effective feedback and continuous improvement mechanisms to ensure high quality practices, products, and services. CSUMB student retention and graduation rates significantly lag behind their sister institutions in the CSU system. Additionally Hispanic and low-income transfer students in STEM majors at CSUMB have graduation rates of 50 percent and 40 percent respectively, which are significantly lower than comparable transfer graduation rates for the CSU system. Of the 23 CSU campuses CSUMB is last in attracting and enrolling transfer students. Furthermore, the number of transfer students decreased by 20 percent over the past two years, and in the 2007-08 academic year only eight percent of all Hartnell College transfer students to CSUMB were in the STEM disciplines. Through this program, CSUMB will invigorate the academic experience, and provide students with a clear, contextualized vision of how their academic experience fits within the larger world. This will be achieved through:

• Innovative courses that utilize the latest technology and teach through hands-on, real-world experiences.
• Curriculum that allows students to make connections between courses, disciplines, and the larger world in order to expand their learning environment.
• Undergraduate student research and conference participation that inspire students to fully utilize their knowledge and critical thinking skills.
• Strong faculty-student connections to reinforce connections to the university and the professional community.

The program will also help remedy the community college transfer issue by attracting and retaining STEM transfers students. For this effort to succeed, there must be strong linkages between institutions, faculty, and students. Likewise, there must be a draw – and a clear pathway – toward CSUMB. This will be achieved through sound transfer and articulation agreements supported by faculty-to-faculty connections, and by connecting Hartnell students with the CSUMB learning environment, and applied undergraduate research opportunities. This program will make the connections between institutions, between courses and majors, and between classroom instruction and real-world applications that will strengthen students' desires and abilities to obtain STEM degrees.

East Los Angeles College - P031C080094

Activity Description:

The LEAD applicant, East Los Angeles College (ELAC), enrolled 22,287 students in 2007, with more Hispanic students (16,739 or 75 percent) than any other postsecondary institution in California. The COOPERATIVE institution, California State University Los Angeles (CSULA) enrolled 21,051 students in the same time period; 8,908 Hispanic students (42 percent). The two institutions are located only two miles apart. Over 60 percent of ELAC math enrollments are below college-level, and only 16 percent of math students enroll in Intermediate Algebra or above. Only 188 of 443 degrees awarded in 2007 (42.4 percent) were awarded to Hispanic students—suggesting serious attrition within transfer programs among Hispanic students. **Gaps in service** include: (a) poor articulation between community college and local high schools; (b) "leakage" in STEM pipelines at all levels, including ELAC; (c) heavy remedial math burdens drive students away from STEM majors; (d) women are underrepresented in STEM and Engineering programs; and (e) outdated transfer/articulation agreements between ELAC and CSULA.

PROJECT DESIGN: (a) *Increase admission of math-ready high school graduates* by linking ELAC Engineering admission to the effective Escalante math enrichment program operating at local high schools; (b) *Offer Multi-disciplinary Preview to Engineering Courses,* attracting more Latino students by offering them the prospect of solving problems and contributing to an improved urban quality of life; (c) *Offer Specialized Math for Engineers* to contextualize the calculations and problems required of professional engineers, by presenting concrete and theoretical mathematical solutions; (d) *Complete Modular Articulation Agreements for Engineering between ELAC and CSULA* to allow greater diversity and specialization in lower division course offerings. All services are appropriate to the needs of intended recipients or beneficiaries, based on research and analysis of effective practices in engineering education.

Gavilan College - P031C080030

Activity Description:

STEM Future Professionals: Student Support, Faculty Development, and Streamlined Transfer/ Articulation Model

Gavilan College, Lead	San Jose State University, Partner
Public 2-Year Community: Western Associations of Schools and Colleges (WASC)	Public California State Universities: WASC
Gilroy, CA: northwest San Joaquin Valley	San Jose, CA
Headcount, Fall, 2007: 7,174	Headcount, Fall, 2007: 31,906
Race/Ethnicity: 5% Asian; 2% Black; 47% Hispanic; 40% White; 1% Native American	Race/Ethnicity: 23% Asian/Pacific Islander; 5% Black; 18% Hispanic; 27% White; 1% Native American

STEM Needs	Project Program
1. Students need STEM career information and better math skills; too few STEM majors.	Part 1: STEM Support Center: career and academic advising, tutoring, summer bridges.
2. Faculty need new pedagogies to sustain STEM interest; faculty exchange is rare.	Part 2: Faculty Redesign Courses, Teaching - Learning Exchange, Student Research
3. Address barriers and misalignments in the STEM curriculum pathway: high school through college.	Part 3: Transfer/Articulation Model: Pathway Task Force: representatives from 3 high schools, Citrus College, and La Verne.

Los Angeles Trade-Technical College - P031C080174

Activity Description:

Los Angeles Trade-Technical College (LATTC) and California State University Los Angeles (CSULA) College of Engineering, Computer Science and Technology are applying for a Cooperative Agreement Development Grant under the Hispanic-Serving Institutions Program College Cost Reduction and Access Act to fund the LATTC/CSULA STEM Success Program. Both colleges are Hispanic-Serving Institutions with a large percentage of Hispanic students, most of whom are low-income. The colleges are located in Los Angeles, California and are approximately five miles from each other.

We conducted a needs assessment in preparation for this application and those results, combined with current available research resulted in the following list of needs we will address. The need for:

- Increased outreach and recruitment efforts specific to STEM-related careers; we have too few science related outreach efforts.
- Increased number of STEM related degrees at LATTC; we have several, but more are needed to attract students to STEM fields.
- Increased positive outcomes for Hispanic students in STEM-related classes; the success rate is far too low as compared to other ethnic groups.
- Increased coordination between LATTC and CSULA in STEM career pathways.
- Curriculum alignment and instructor interaction are needed to insure smooth transitions from high school to community college to four-year colleges and universities.
- Increased opportunities for STEM-related student leadership development.

The project design is primarily comprised of LATTC and CSULA jointly developing the STEM Success Program (SSP). The STEM Success Program will consist of three major program activities as follows: (1) Outreach and Recruitment; (2) Program, Pathway and Instructor Development; and (3) Student Support and Leadership Development. And these three program activities will be carried out through the following six interrelated components:

1) The Science and Technology Academy;
2) Development of additional LATTC Associate in Science degree programs;
3) STEM Pathways Initiative;
4) Vertical STEM Teacher Alliance;
5) Student Leadership Development Component; and
6) STEM Student Support Services Network.

Oxnard College - P031C080153

Activity Description:

Pathway to the Baccalaureate in STEM Fields: Realizing the Dream

Located approximately 60 miles northwest of Los Angeles, Oxnard College (OC) is the youngest and fastest growing of the three community colleges in the Ventura County Community College District. Student unduplicated headcount for 2006-07 was 10,450, over 80 percent from racial/ethnic minority groups, with Hispanics making up the largest group (61 percent of enrollment). OC has undergone significant transformation in recent years, and continues to expand and enhance its programs and services in response to the needs of our service area. OC has been successful in attracting an increasing Hispanic enrollment, and is the college of choice for many throughout the district because of its commitment to student success. However, OC is challenged by the fact that many of our students arrive at the college underserved by, and underprepared for, the educational pathway which leads to 21st century degrees and careers.

Ventura County is now at the forefront of California coastal conservation efforts, which are creating exciting, meaningful jobs and career opportunities in fields such as bioscience and environmental science. Despite the fact that the college is located just two miles from the Pacific coast, most of our students do not take advantage of this abundant resource and are unaware of the many opportunities it provides. Through intersegmental collaboration, OC and its partners – California State University Channel Islands (CSUCI) and University of California Santa Barbara (UCSB) – will combine efforts and resources to develop a model educational STEM pathway which prepares, motivates and supports students through baccalaureate degree completion.

Riverside City College - P031C080046

Activity Description:

Riverside City College (RCC) is applying as lead institution in a cooperative development grant in partnership with its sister campuses, Norco Campus (NC) and Moreno Valley Campus (MVC) an the nearby four-year institutions, California State Polytechnic University, Pomona (CPP) and California State University, San Bernardino (CSUSB). The partnership will focus on one overarching activity: improving STEM student learning and success by developing model STEM transfer programs between the institutions and building a strong foundation for transfer with success strategies in the STEM discipline.

Through a variety of student activities, support and outreach services, faculty development, and articulation agreements, ***Step Up to Success*** will meet the following five goals: (1) Increase the number of underrepresented minorities, women, and veterans who want to attend RCC and major in STEM; (2) Increase student retention; (3) Create faculty-to-faculty teams in order to evaluate STEM extended courses in order to determine equivalency; (4) Develop model STEM transfer program with two local four-year universities; and (5) Develop a student tracking system and activities that reinforce the connection between high school students and RCC and between RCC students and four-year institutional partners.

Santa Ana College - P031C080159

Activity Description:

Project GPS2 – Guiding and Preparing STEM Students

Santa Ana College (Coordinating Institution) is a public, two-year community college that enrolls 27,097 students, 45 percent of whom are Hispanic. **Fullerton College** is a public, two-year community college that enrolls 20,638 students, 34 percent of whom are Hispanic. **California State University, Fullerton** is a public, four-year university that enrolls 37,130 students, 28 percent of whom are Hispanic.

Project GPS2 – Guiding and Preparing STEM Students is a Cooperative Arrangement designed to: (1) increase the number of Hispanic and other low-income students attaining degrees in the fields of science, technology, engineering, or mathematics; (2) develop model transfer and articulation agreements between two-year HSI's and a four-year institution; and (3) increase the number of secondary math and science teachers and to improve the knowledge, skills, and abilities of prospective elementary school teachers in math, science, and technology.

To address the dire need for a STEM knowledgeable and prepared workforce, the low transfer rates of Hispanic and other minority students in STEM majors, and the critical shortage of highly-qualified K-12 teachers (especially for math and science), Project GPS2 proposes to make substantial change. Utilizing innovative and wide-reaching outreach strategies to ignite interest in STEM, extensive fieldwork and mentoring, and a myriad of support services, a measurable increase in the number of students entering the STEM pipeline will occur. The development of two new A.A. degrees, a bachelor's degree in Earth Science, a new science teaching credential, and a seamless transition from the community college to the university will provide the most significant and overt changes to our institutions. Virtual advising, Virtual Learning Communities, and classrooms and facilities equipped with the latest instructional technology will pique student interest in STEM careers and equip future K-12 teachers with the tools they need to inspire the next generation. The enhancement and expansion of teacher education centers at each partner institution will greatly build the capacity of the institutions to identify and support future math and science teachers. Significant efforts to improve data collection, communication, and coordination across institutions and across the region utilizing a Joint STEM symposium and the Regional Teacher Education Council will greatly contribute to the success of students pursuing STEM majors, careers, and/or K-12 teaching.

Taft College - P031C080066

Activity Description:

Developing The Stem Central California Corridor (STEM C^3)

Taft College located in the center of the San Joaquin Valley of California, is a two-year, public Hispanic-serving institution with an important and difficult mission to provide educational services and opportunity to an expansive service area which is undergoing dramatic demographic and economic change and which, by most measures, is severely educationally underserved.

Through this project, Taft College and its partners located at each end of a 6,000 square-mile corridor, Antelope Valley College and California State University – Fresno at University Center, will combine expertise and resources to address the critical need for well-trained engineers locally and regionally:

(1) **Clearing the STEM Pathway** by removing obstacles in the pipeline through increasing the awareness, motivation and preparedness of Hispanic and other low-income students before college;
(2) **Developing an Intersegmental Mechatronics-Engineering Degree Pathway** – an interdisciplinary STEM field which prepares graduates for emerging and in demand fields in the corridor as well as nationally; and
(3) **Sustaining the Pathway to Degree Completion** by improving instruction and support services modeled on best practice to improve Hispanic student outcomes in the STEM pathway so that access to education is more than a revolving door.

University of La Verne- P031C080019

Activity Description:

Supporting STEM Majors for Future Careers: Advising, Tutoring, Summer Bridges, Faculty Development, Student Research, Transfer/Articulation Model

The University of La Verne (ULV) in La Verne, California, (20 miles northeast of Los Angeles) must strengthen its capacity to provide a supportive environment for STEM students, its own majors and those transferring from Citrus College, the project's community college, Hispanic-serving institution (HSI) partner. Citrus is located in nearby Glendora, California. Student demographics are very similar.

Primary Needs	Project Strategies
1. Student math skills need improvement; retention in STEM majors and courses is too low; too few majors.	*Strategy* 1: STEM Center: career/ academic advising, tutoring, Summer Science Camp & PowerMath, STEM Student Ambassadors.
2. Faculty need new methods to sustain STEM major's engagement; faculty do not have adequate time with colleagues in their field.	*Strategy* 2: Faculty Re-design of STEM Courses, student research projects, Teaching-Learning Exchange, Science Squad.
3. Address barriers and misalignments in the STEM curriculum pathway: high school through college.	*Strategy* 3: Transfer/Articulation Model: Pathway Task Force: representatives from 3 high schools, Citrus College, and La Verne.

Undergraduate	White	Asian/Pacific	Hispanic	African-American	Other
ULV: 1,636	35.4%	6.4%	38.45%	9.65%	9.1%
Citrus: 20,525	32.39%	12.19%	39.49%	6.05%	9.84%

FLORIDA

Miami Dade College - P031C080145

Activity Description:

Based on common needs and shared environmental concerns, Miami Dade College (MDC) and the University of Puerto (UPR) have joined forces to establish a *Partnership for Undergraduate Education in the Natural Sciences for Transformational Engagement of STEM Students: PUENTES* (meaning "bridges" in Spanish). Project PUENTES will incorporate best practices at similar institutions to increase the number of Hispanic and other low-income students attaining degrees in STEM fields and to develop a model transfer and articulation agreement in STEM disciplines between a two-year Hispanic-serving institution and a four-year institution. The project will build a number of bridges—both academic and virtual—to achieve these goals.

First, Project PUENTES will develop an Associate in Arts degree in Environmental Science at MDC that aligns with the Bachelor of Science degree in Environmental Sciences and other related Natural Science programs at UPR. A comprehensive model articulation plan and a dedicated STEM endowment will facilitate seamless transition between the two institutions. Parallel Environmental Science Laboratories at both institutions will support not only these degree programs but also a faculty research exchange program, creating a common culture of research and providing students with stimulating hands-on experience that will motivate them to persist in their studies.

Project PUENTES will bridge knowledge gaps for these students through a robust, technology-based peer tutoring-mentoring program. Finally, it will deploy telecommunications technology to deliver collaborative bilingual science seminars and Internet technology to create an MDC-UPR learning community among students and faculty. Together, these bridges will cement a lasting partnership between MDC and UPR and strengthen their capacity to promote student success in STEM over the long term. The project constitutes a model on which MDC, UPR, and other institutions can base articulation agreements in the future.

St. Thomas University - P031C080179

Activity Description:

STEM Integration to Promote Undergraduate Enrollment, Degrees and Opportunities

¡SI PUEDO! will increase Hispanic and low-income students achieving university degrees in science or mathematics and will create four-year, seamless curricula in chemistry, biology, and mathematics across two- and four-year programs. A key outcome of !SI PUEDO! will more than double enrollment and retention of Hispanic and low-income students in STEM majors at the four-year institution (120 STEM fellows per year, and 240 over two years). With a seamless curriculum and enhanced student support services, advising and mentoring, graduation rates of STEM fellows is predicted to increase the current graduation and retention rate of 19.2 percent at Miami Dade College-InterAmerican to 69.2 percent, and from 18.2 percent at St. Thomas University (STU) to 68.2 percent.

Need: Miami Dade County, located in South Florida, has almost two million Hispanics. Many of the Miami-Dade County public schools have enrollments of more than 80 percent Hispanic, 60 percent of these are from low-income families. The number of Hispanics in science and mathematics degree programs is low and the number completing degrees is even lower. A number of barriers must be removed or mitigated to increase the number of Hispanics enrolled in and completing these STEM degrees, including the lack of continuity between lower and upper divisions for students transferring from two-year to four-year colleges, lack of adequate support services and advising, economics forcing students to work full-time while in college, and limited science activities to engage these students. *¡SI PUEDO!* will address these academic barriers and will demonstrate the commitment of two institutions to increase the number of Hispanics and low-income students enrolling in and completing science and mathematics undergraduate degrees.

MDC, one of the Nation's leading colleges with two-year programs, will join in permanent *Hispanic STEM Partnership* with STU, a Hispanic-serving institution with a special focus on undergraduate science and math education. These institutions join their diverse strengths to create permanent and supported four-year seamless degree programs that will increase science and mathematics degree achievement.

NEW JERSEY

New Jersey City University - P031C080078

Activity Description:

Improving the Pipeline for Latinos in Science and Mathematics Among Two Urban Hispanic-Serving Institutions

This CCRAA Cooperative Arrangement application is the result of a partnership between New Jersey City University (NJCU) and Hudson County Community College (HCCC), two institutions that are bound by the commonality of their missions, their geographic environment in Jersey City, New Jersey, and their aspirations for supporting Hispanic and other minority students achieve academic and economic success. It attacks three problems:

1. Low numbers of low-income and underrepresented students enrolled in science and mathematics majors at both institutions.
2. Transfer students' need to repeat courses or take extra credits.
3. Poor performance in science and mathematics classes, low retention and graduation rates, and low numbers of students graduating with STEM degrees.

In Activity One, ***Increasing STEM Majors at NJCU and HCCC***, we will improve alignment of STEM programs and courses between HCCC and NJCU and develop a statewide articulation model for STEM programs. A cadre of Practicing Professionals will make career presentations in classrooms to provide job information and we will create and disseminate nationally a series of STEM career videos.

In Activity Two, ***Classroom Support for Student Success***, we will improve instruction in STEM teaching through faculty development opportunities, make extensive renovations of laboratory facilities, and purchase cutting-edge science equipment. To support student success, faculty will create individualized Web-support modules for targeted STEM courses.

NEW MEXICO

New Mexico Highlands University - P031C080040

Activity Description:

Program Bridging Careers For Success (BCS)

The **purpose and goal** of the BCS, in a cooperative arrangement between New Mexico Highlands University (NMHU) and Luna Community College (LCC), is to increase the number of low-income northern New Mexico Hispanic students earning baccalaureate science, technology, engineering, and mathematics (STEM) degrees through a model transfer and articulation agreement and a targeted program of support.

NMHU and LCC are Hispanic-serving institutions collaborating to provide a seamless evidence-based STEM support and career building system that tackles barriers faced by many first generation northern New Mexico Hispanics in higher education and transforms them into positive program actions to ensure student success. These actions are presented as outcome-based **objectives** for the project including:

- Faculty at NMHU and LCC will jointly align courses and establish an articulation agreement in eight STEM programs by 2010 *to ensure a seamless transfer of students*;

- NMHU and LLC will operate a dual institutional multi-action faculty and student STEM support center by 2010 *to share resources in the support of students and faculty*;

- NMHU and LCC will institute two targeted infrastructure improvements including: state-of-the-art support faculties for students and faculty support; and a new hiring and promotional criteria for faculty with successful experience working with Hispanic students and effective teaching practices by 2010 *to create a long-term impact in STEM at NMHU and LCC*; and NMHU and LLC will each establish an endowment fund to supplement the operation of the BCS Project by 2010 *and to ensure continuation of the project after funding.*

The Regents of New Mexico State University - P031C080067

Activity Description:

PRIMOS - Partnership for Retention and Improvement of Meaningful Opportunities in Science, Technology, Engineering, and Mathematics (STEM)

New Mexico State University (NMSU) and Doña Ana Community College (DACC), both Hispanic-serving institutions (HSIs), will implement an integrated system of research-based activities to address the gaps in educational attainment for Hispanic and other low-income undergraduates in science, engineering, technology and mathematics (STEM) fields. Broadly, those gaps are under-preparation for postsecondary education and low enrollment, retention, transfer and graduation.

Our goals are to: (1) increase the numbers of students who declare a STEM major by 20 percent; (2) increase the number of degrees earned in STEM fields by eight percent; and (3) establish a transfer model that results in a 20 percent increase in the students who successfully transfer from DACC to NMSU.

To accomplish these goals, we have identified research-based activities supported by a strong management plan. The overarching categories of activities include improved student advising, academic and student support, engaged teaching and learning, and data coordination. Each of these categories is supported by activities such as redesigning curriculum in STEM barrier courses, refresher courses in mathematics for entering freshmen, a transfer advisor at DACC, supplemental instruction, coaches for students clustered in learning communities, a new STEM component in our college readiness courses, faculty development to enhance teaching and learning, and increased employment opportunities for STEM seniors.

NEW YORK

Borough of Manhattan Community College - P031C080081

Activity Description:

Borough of Manhattan Community College (BMCC) is one of nineteen units comprising the City University of New York, located in one of the fastest growing regions in the city of New York (Tribeca). BMCC currently serves more than 24,000 students in its credit (18,200) and noncredit (6,000) programs making it the largest community college in the university. Located in the heart of New York City's financial center, the communities served by the college extend far beyond the Wall Street-City Hall area. Students commute to BMCC from each of the city's five boroughs and are drawn to the college because of its commitment to academic excellence, flexible scheduling options and the comprehensive educational services afforded its student body.

Although BMCC has made a concerted effort to improve student success in the STEM disciplines through the implementation of a variety of programs, data indicates academic achievement, especially among Latinos and other disadvantaged groups remains a problem. To address this problem, BMCC seeks funding to establish a *Science for Forensics Program* in partnership with John Jay College under the Title V CCRAA Cooperative initiative. The project will redesign existing space to create state-of-the-art science labs, establish a Pre-Freshmen Forensic Science Summer Immersion, contextualizing basic science courses, support for student research and expansion of student support services.

Bronx Community College - P031C080204

Activity Description:

Opening the Pipeline: Increasing STEM Transfer and Graduation Rates at Bronx Community College and the City College of New York

American higher education today faces a profound challenge: to produce greater numbers of science, technology, engineering, and mathematics (STEM) graduates, and to ensure that minority and economically disadvantaged students are equitably represented in this critically important workforce. This project seeks to strengthen the institutional frameworks needed to produce STEM Associate's degree holders at Bronx Community College (BCC), and to bring them to successful Bachelor's degree attainment at the City College of New York (CCNY).

Three qualities known to lead to student success in STEM disciplines are: *continuity*, which structures the educational experience in ways that best support student advancement through increasingly rigorous STEM content; *capacity*, which emphasizes enhancing student knowledge and skills; and *engagement*, which focuses on developing student interest and motivation. This project is organized around activities that build upon these three indicators of student success:

1. *Continuity*—Students transferring from BCC to CCNY will be given academic advisement and mentoring by STEM faculty at both institutions. Cross-campus faculty collaboration will align STEM coursework and curricula. Academic advisors will effectively and actively track students. New dual/joint degree programs will be developed in STEM disciplines.

2. *Capacity*—A new interdisciplinary lab skills course will accelerate student progress at BCC, and BCC transfer students will attend joint BCC/CCNY "Bridge" programs designed to strengthen key mathematical skills and comprehension of scientific concepts. Paid internships will provide financial support and reinforce learning. Laboratory upgrades at BCC will align coursework across the campuses.

3. *Engagement*—CCNY peer and faculty mentors will advise advanced BCC STEM students. Psychosocial counselors will intervene to help BCC students when needed. BCC's STEM Resource Center will host career development events and distribute information on financial aid, internships, and scholarships. The two campuses will jointly sponsor research projects, field trips, and family engagement activities for STEM students.

Vaughn College of Aeronautics and Technology - P031C080048

Activity Description:

Developing a Seamless Intersegmental Pathway for Hispanics to Mechatronics/ Engineering Degrees through Collaborative Effort

In this partnership CCRAA-HSI application, Vaughn College of Aeronautics and Technology (Vaughn) has joined forces with LaGuardia Community College (LAGCC) to develop a much needed pathway for Hispanic students to Mechatronics and related engineering careers in high need. The project partners are both located in Queens, New York, a service area, which includes one of the most densely populated and diverse populations in America.

Vaughn is well positioned to provide the motivation for STEM education that research says Hispanics must have to overcome the many obstacles to degree completion. Vaughn's history and development attest to the attractiveness of aviation and aeronautics to Hispanics. LAGCC is the most effective Hispanic-serving community college in America in transfer, and has many nationally recognized, evidence-based best practices focused on translating access to success, including supplemental instruction, learning communities and e-Portfolios. Combining expertise and resources, linking faculty and programs across institutions, Vaughn and LAGCC will develop a model engineering/technology pathway for students from high school through bachelor's degree which will ensure success in terms of degree completion and will prepare students for the exciting, emerging field of Mechatronics.

The Vaughn/LAGCC STEM Pathway Project features to increase access and success of Hispanic students in STEM degree attainment include: development of the LaGuardia Youth Center for Engineering Excellence (LYCEE) for dual enrolled high school students, improving infrastructure to better facilitate instruction of all programs related to the Mechatronics pathway, and the development of a STEM Success Center at Vaughn which provides a centralized hub of improved support and transition services for Vaughn's native and transfer students.

PUERTO RICO

Universidad Politécnica de Puerto Rico - P031C080169

Activity Description:

Increasing Enrollment at Universidad Politécnica de Puerto Rico by Collaborating with Higher Education Institutions

Studies from the National Science Foundation show that forty percent (40 percent) of engineering students at four-year institutions are graduates of junior colleges, or two-year institutions. With this knowledge, Universidad Politecnica de Puerto Rico (UPPR) researched ways to ease the transition from a two-year institution to a four-year institution by developing several programs and online options for education.

Goal 1: Within two years, add a Distance Education Program to the College of Engineering and Geomatic Science, resulting in a ten percent increase of students using the Distance Education Program at UPPR.

UPPR is a commuter college, in that there are no dorms. Therefore, UPPR will be able to attract more students by developing a distance education online program. Also, a distance education program will be developed in order to collaborate with other higher education institutions.

Goal 2**:** Within two years, a High Achievers Program for Junior College Hispanic students will be created, resulting in a program that increases the total enrollment of the UPPR College Engineering and Geometric Science by five percent, as seen in annual enrollment figures from UPPR.

High Achieving Hispanic Junior College students needs are different than the average college students. UPPR will be collaborating with junior colleges to assist students who wish to enter the engineering field through hands-on training, speaking engagements, travel to national conferences, leadership skills, and internship opportunities. Knowledge is more than from the book, it is about life experiences, and UPPR will use this to assist High Achieving Hispanic students from junior colleges wishing to enter the engineering field.

Goal 3: Create a Mech-Tech Junior College (MTJC) Connections Program, which will increase the number of MTJC graduates by five percent within two years at UPPR.

MTJC and UPPR have had long-standing collaborations. However, the transition is usually done without any assistance, and currently, only one course transfers. The MTJC Connections Program will be created to ease the transition between both institutions, and provide special opportunities for the participants, such as speaking engagements, conferences, and academic mentors.

TEXAS

Amarillo College - P031C080131

Activity Description:

Amarillo College, a public, two-year, Hispanic-serving institution (HSI), located in Amarillo, Texas, has entered into a Cooperative Arrangement with New Mexico Institute of Mining and Technology, a public, four-year, graduate, science and engineering institution, located in Socorro, New Mexico, to develop *A Model for Participatory, Collaborative STEM Learning.* The purpose of this project, *addressing both CCRAA HSI Competitive Priorities,* is two-fold: (1) to increase the number of Hispanic and other low-income students attaining degrees in the fields of science and engineering; and (2) to develop a model transfer and articulation agreement between our two institutions, a two-year Hispanic-serving institution and a two-year STEM institution.

Amarillo College is the largest college in the Texas Panhandle (10,387 students fall 2007); two branch campuses and an outreach center extend access throughout the region. Reflecting the demographics of the nine-county service area, more than 3,200 fall 2007 students were Hispanic. New Mexico Tech is a small STEM institution (1,327 students fall 2007) with a national reputation for academic quality and low costs. NMT students are mostly in-state (85 percent), two males for every female, traditional, high-achieving, and racially diverse, with Hispanics by far the largest minority group (24.9 percent fall 2007).

The need to increase science and engineering graduates through model initiatives is of critical importance to the Amarillo College and New Mexico Tech combined services areas, which have high numbers and proportions of residents with low educational attainment (four-six percentage points below national, Hispanic), low per capita income (17-32 percent below national), and high rates of poverty (30-40 percent). Need is even greater among Hispanic residents (expected to reach 50 percent of the Panhandle population by 2030). However, the region also has growing industry opportunities for STEM graduates in niche specializations, which our institutions can support.

Therefore, Amarillo College and New Mexico Tech propose to develop a model articulation agreement that will increase the number of Hispanic and low-income students attaining degrees in Engineering and Science by: (1) closely articulating two-year and four-year curricula and learning environments from six Amarillo College A.S. programs to five New Mexico Tech B.S. programs; (2) jointly developing faculty; (3) developing transparent transfer and degree completion processes; and (4) joining complementary instructional delivery methods.

El Centro College - P031C080006

Activity Description:

El Centro College (ECC) and Texas Tech University (TTU) propose to establish new articulated 2 + 2 transfer agreements which will open pathways to degrees and careers in Environmental Science, targeting Hispanic and other low income students in central Dallas. In support, the new Trinity River Audubon Center, near a prominent bend in the Trinity River, (located eight minutes south of downtown Dallas and ECC) will provide dedicated classroom and laboratory space, as well as serve as a research/field experiences site.

ECC, one of seven colleges in the Dallas County Community College District, serves ethnically diverse, economically disadvantaged and increasingly Hispanic neighborhoods. Although ECC offers pre-professional courses transferable to four-year institutions, it has a distinctive and historical competency in technical occupational training in more than 40 fields with few transfers. With this partnership articulation project, ECC will increase STEM degree awards, increase its capacity to transfer Hispanic and low income students in STEM fields, renovate and/or remodel to expand lab space for science majors, strengthen and articulate laboratory instrumentation and curriculum, create new support systems for math students – including math labs, develop and pilot student research opportunities, STEM mentors and field experiences, and work with community to create a pre-college pipeline leading to STEM transfer programs.

For Texas Tech University off-campus sites provide lower-division courses in order to provide a seamless degree pathway for transfer. Programs offered at outlying sites such as this one at ECC in Dallas expand access to higher education, especially for low income and underrepresented groups. In this partnership with ECC, TTU will support articulation of transfer science curriculum, jointly develop articulated and strengthened laboratory experiences – improving labs both in the classroom and the field, and develop/pilot biology student field research component at both Trinity River and Llano River Field Station at Junction. TTU will deliver four-year courses directly to Dallas to increase access and lower costs for low-income and Hispanic students pursuing bachelor's degrees in STEM fields.

Midland College - P031C080077

Activity Description:

Midland College (MC), serving as the lead in this cooperative project, and Sul Ross State University (SRSU) are two public Hispanic-serving institutions serving a predominantly rural region of West Texas. As a two-year community college, MC serves more than 5,700 each fall (31.9 percent Hispanic and 69 percent low-income). Sul Ross State University offers baccalaureate and master's degree programs to more than 1,700 students (46.5 percent Hispanic; 59 percent low-income). Both institutions serve a highly disadvantaged service region, plagued with high poverty and very low educational attainment. Here, only 75.6 percent of adults and 63.7 percent of Hispanic adults have *a high school diploma* (compared to 78.6 percent, Texas; 84.1 percent, U.S.). College degree completion is also low with only 18.1 percent of adult residents and only 4.4 percent of Hispanic adults having a bachelor's degree (compared to 10.3 percent, Texas; 12.3 percent, U.S.).

The partner institutions have a history of collaboration and have just completed a very successful Title V Developing Hispanic-Serving Institution Cooperative project. As a result of this collaboration, a student can now receive a baccalaureate degree in Natural Resource Management or Earth Science from Sul Ross while attending classes on the MC campus.

Through this CCRAA project, MC and SRSU seek to build upon this history of success by developing the capacity to offer and deliver courses leading to B.S. degrees in biology, chemistry, and geology for students attending classes on the two-year campus of Midland College.

San Antonio College - P031C080008

Activity Description:

A Partnership to Improve Access to the Baccalaureate for South Texans through Science, Technology, Engineering and Math (STEM) Teaching and Learning Innovation

Purpose: *to significantly increase the numbers of Hispanic and other low-income students enrolled in postsecondary science, technology, engineering and mathematics programs at San Antonio College (SAC) and Texas State University (TSU); to significantly decrease the time to graduation/transfer for Hispanic students at SAC and Texas State; and to increase the numbers of Hispanic and low income students obtaining baccalaureate degrees in science, technology, engineering and mathematics.*

This CCRAA Cooperative arrangement, **"A Partnership to Improve Access to the Baccalaureate for South Texans through STEM Innovation,"** will be a partnership between San Antonio College, Texas' largest single-campus community college, and Texas State University-San Marcos, an emerging Hispanic-serving institution (HSI) 45 miles northwest of San Antonio. By combining the resources and expertise of each institution, SAC, which serves over 10,000 Hispanics each semester, will be able to provide more effective STEM instruction and support to Hispanic Texans and remove obstacles in their path to STEM careers, and Texas State, which has extremely high rates of retention and graduation for the 22 percent of its enrollment that is Hispanic, will be able to offer its excellent STEM education to more Hispanics.

SAC prepares large numbers of Hispanics, but has low transfer rates and low productive grade rates in gatekeeper courses. The proportion of Hispanics served by Texas State is not reflective of the service area's population. SAC will help Texas State enroll more qualified Hispanics in STEM programs; Texas State's affordable, student-centered, academic excellence and its success with Hispanic students can help SAC STEM transfers acquire bachelor's degrees.

Puentes (bridges) **will consist of four components: (**1) pipeline activities designed to increase SAC transfers to Texas State; (2) establishment of a Math Center (Math Space) where best practices and alternative delivery methods will be used to help improve math retention and remove math barriers to STEM career success; (3) expansion and improvement of SAC's new BioSpot Center for biology majors and their new Math, Engineering and Science Achievement (MESA) Center for other STEM majors; and (4) Professional Development for faculty at both institutions, including curricular development and the piloting and rigorous assessment of STEM best practices in the classroom.

University of St. Thomas - P031C080184

Activity Description:

University of St. Thomas (UST) is an independent, Catholic, coeducational Hispanic-serving institution (HSI) located in Houston, Texas. UST currently enrolls approximately 1,700 undergraduate and 1,640 graduate students from 30 states and 57 countries. From 1990 to 2000 Houston's Hispanic population grew by 62 percent.

To meet the dual purposes of the CCRAA-HSI grant program, UST has created a collaborative partnership with **Houston Community College (HCC)**. This HSI is the fourth largest community college system in the United States and enrolls 52,000 students across six campuses. HCC and UST STEM faculty have a history of submitting joint proposals to support collaborative undergraduate research efforts involving students and faculty from both institutions.

The collaborative partnership undertaken for this CCRAA-HSI grant initiative has resulted in a carefully planned two-year program to be known as the **ELEMENTS Project: Enhancing the Learning Environment for Minorities Enrolled in The Sciences.** The four goals of **the ELEMENTS Project** are as follows:

Goal 1: Increase the number of Hispanic and other low-income students attaining degrees in the fields of science, technology, engineering, or mathematics (STEM).
Goal 2: Develop model transfer and articulation agreements between two-year HSIs and four-year institutions in such fields.
Goal 3: Enhance the STEM instructional environment at both participating institutions.
Goal 4: Increase local capacity to continue programming; disseminate program approaches/results to other HSIs; replicate program successes.

Southwest Texas Junior College - P031C080007

Activity Description:

Creating A Math And Science Community In Southwest Texas

Southwest Texas Junior College (SWTJC) has partnered with The University of Texas at Austin (UT) and Sul Ross State University - Rio Grande College (RGC) to design and implement the **"Creating a Math and Science Community in Southwest Texas (CAMSC)** program**."** The over-arching goal of the **CAMSC** program is to increase the number of Hispanic and other low-income students majoring and attaining degrees in science, technology, engineering, and mathematics (STEM) and to develop model transfer and articulation agreements in such fields.

The CAMSC program will build upon successful STEM collaborations with UT and RGC as well as SWTJC STEM programs. The project will address: (1) the gap in the number, quality and access to STEM educational opportunities; (2) the disparity in access to STEM course offerings in rural southwest Texas; (3) inefficiencies in the STEM educational pipeline; (4) disparity in success rate between Hispanic and White students in STEM courses; and (5) inadequate support services for STEM programs and students.

Two activities are designed to ensure that students in rural southwest Texas have every opportunity to "prove themselves" capable of being a great geologist, engineer, physicist, or any other STEM related profession. Through a variety of means, the CAMSC program will help these students expand their horizons academically, culturally and socially. Building on the success of past and current initiatives, the academically gifted students presently in STEM programs and those yet to come are "Academic Stars" just waiting to shine. The CAMSC **"Padrino – Asesor"** model is designed to establish a community which will support, challenge and equip these students with the academic and social tools that they will need in order to excel.

Texas A&M University-Kingsville - P031C080200

Activity Description:

Developing A Stem Success Pipeline at Texas A&M University

Texas A&M University-Kingsville (TAMUK) is a state-supported institution serving an area of rural South Texas bordering Mexico. The university serves an area approximately the size of West Virginia, ranging from San Antonio to the Mexican border. TAMUK is designated as a minority-serving institution, with 62 percent of its student population being Hispanic. TAMUK's 15-county primary service area has a population of approximately 1.35 million and is characterized by poverty, high unemployment and welfare rates, substantial living conditions, and high ratios of underserved and disadvantaged citizens.

Del Mar College. Del Mar College (DMC) is ranked among the nation's top three percent of community colleges granting associate degrees to Hispanic students, according to the national publication *Community College Week* in their June 19, 2006 special issue, Top 100 Associates Degree Producers. Furthermore, *Community College Week* reported in the December 4, 2006 issue that DMC ranked Number 8 among the fastest-growing public, two-year colleges in the nation between fall 2004 and fall 2005. Enrollment grew 5.8 percent from 11,345 to 12,006 students.

Activity 1: Enhancing Student Success in Engineering and Technology. This activity has been designed with the goal of expanding student awareness of career opportunities through undergraduate research and streamlining the process of transitioning from DMC to TAMUK. Academic advising and providing oversight to the transfer and articulation process are key elements of making each students transition successful. In addition, to overcome difficulties encountered in gateway courses for STEM majors, supplemental instruction will be provided. Finally, a STEM Success Pipeline living-learning community will be developed at TAMUK to provide additional support to CCRAA participants outside the classroom.

Activity 2: Enhancing Teaching and Learning in Engineering and Technology. Transforming learning with technology through course redesign and equipping Intelligent Classrooms is one focus of this activity. To serve neo-millennial students better and enhance teaching and learning at DMC and TAMUK, new online and hybrid courses will be developed serving STEM majors. In addition, a faculty investment program based upon a faculty learning community concept will provide continuing professional development to DMC and TAMUK faculty with the goal of enhancing capacity and supporting student success.

The University of Texas-Pan American - P031C080218

Activity Description:

An Integrated STEM Pathways Support Initiative for the Rio South Texas Region -- The University of Texas-Pan American (UTP A), a 78 year old, general academic component of The University of Texas system, is a comprehensive university serving over 17,000 students annually, of which more than 85 percent are of Hispanic origin. In fact, UTP A educates the most Mexican American students in the nation. UTP A is located in Edinburg, Texas, the county seat of Hidalgo County, the most populous of the four counties comprising the area known as the Lower Rio Grande Valley. The southern border of Hidalgo County is the Rio Grande River, the international border between Mexico and the United States. UTP A is the only comprehensive university in the seventh most populous county in the state and enrolls the highest number and highest percentage of Hispanics among Texas public universities.

The University of Texas-Pan American and South Texas College (STC), a two-year HSI, are collaborating on a number of efforts to facilitate student engagement and success in STEM areas. With both institutions located in Hidalgo County and having well over 80 percent Hispanic student populations (approximately 70 percent of whom are first generation college students), the purpose of this Cooperative Arrangement Development Grant proposal is to develop and support strategies that will facilitate the success of Hispanics and other low-income students in STEM areas. In order to do this the focus of the efforts will be to support four activities that constitute An Integrated STEM Pathways Support Initiative for the Rio South Texas Region. *The first activity* will enhance student services to foster success in Calculus I, as it is known to be a roadblock for student success in STEM fields. The *second activity* will support the implementation of Challenge-Based Instruction (CBI) in selected courses. CBI is known to be a more effective approach to the learning process. The *third activity* will support faculty development through workshops on CBI techniques with a focus on increasing student success, and finally the *fourth activity* will grow and support pathways to STEM fields between STC and UTP A. As an integrated project in support of student success in STEM fields, the proposed project will provide a model that will have a significant impact on the number of STEM graduates and that will be simple to replicate in other geographical areas.

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