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ABSTRACT

The Summer Science Camps (SSC) Program supports residential and commuter enrichment projects for seventh through ninth grade minority students who are underrepresented in science, engineering, and mathematics. Eligible organizations include school districts, museums, colleges, universities, and nonprofit youth-centered and/or community-based organizations. The goals of SSC are to provide a foundation for a lifelong interest in science and mathematics for all participants and to encourage the consideration of science, engineering, and mathematics as possible career choices. This document presents the names, addresses, phone numbers, and descriptions of 28 summer science camps located throughout the United States. (PR)

NATIONAL SCIENCE FOUNDATION
DIRECTORATE FOR EDUCATION AND HUMAN RESOURCES
DIVISION OF HUMAN RESOURCE DEVELOPMENT

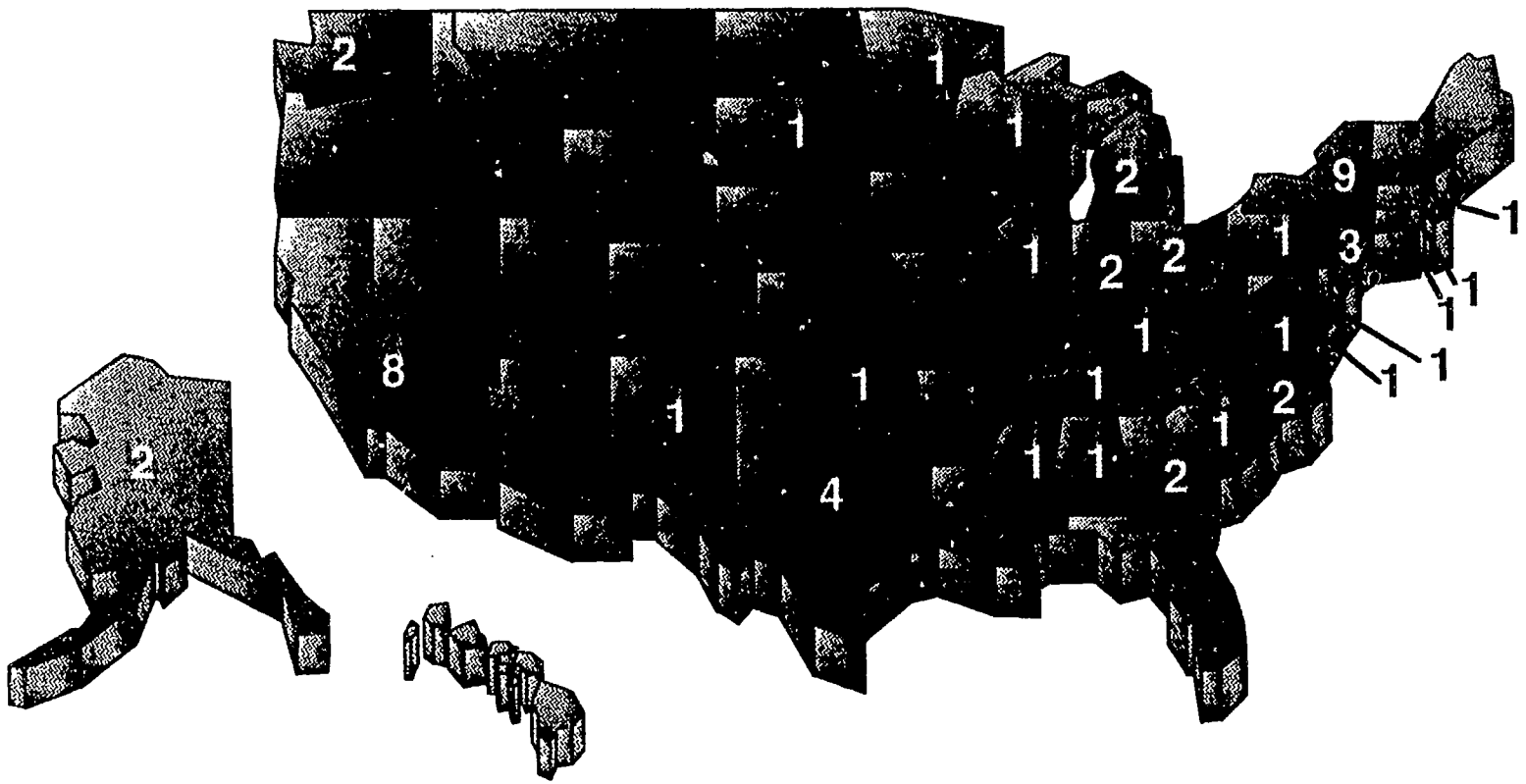
SUMMER SCIENCE CAMPS PROGRAM

(SSC)

1994

Directory of Principal Investigators
Map of Award Sites
Project Awards

SUMMER SCIENCE CAMPS



The Summer Science Camps (SSC) Program supports residential and commuter enrichment projects for seventh through ninth grade minority students who are underrepresented in science, engineering, and mathematics (SEM). Eligible organizations include school districts, museums, colleges, universities, and nonprofit youth-centered and/or community-based organizations. The goals of SSC are to provide a foundation for a lifelong interest in science and mathematics for all participants and to encourage the consideration of science, engineering, and mathematics as possible career choices.

*Numbers indicates number of projects in each state

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Directorate for Education and Human Resources
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Summer Science Camps (SSC) 1992

Project Abstracts

SSC-9252751
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"Clark Atlanta University Summer Science Camp"

Clark Atlanta University is sponsoring a four-week Summer Science Camp for forty seventh and eighth grade African American students each summer for the three year period, 1992-1994. Program participants, selected from elementary and middle schools in Metropolitan Atlanta, enroll in an academic enrichment experience that includes interdisciplinary science, computer applications, mathematics, and communication skills. Instruction emphasizes problem solving and critical thinking while focusing on real life situations. In addition to classroom experiences, participants interact with research scientists in their laboratories and in career awareness seminars and discussion groups. Weekly field trips round out the academic experiences of the program. Follow-up activities during the academic year include workshops each semester for program participants and their parents, an awards program at the end of the school year, and a mentoring program in which participants are matched with undergraduate or graduate student science majors who serve as their mentors.

SSC-9252752
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"CPEP Summer Program"

The Connecticut Pre-Engineering Program, Inc. (CPEP) Summer Program at Trinity College offers a five-week program which integrates instruction in the sciences, mathematics, computer applications, guidance and career counseling and language arts/study skills. Each year forty underrepresented minority rising eighth and ninth grade students take grade appropriate courses and participate on field trips. The program employs a hands-on approach to mathematics and science education. Learning experiences are designed to involve students actively in science inquiry and mathematics as an integral aspect of investigation. Professionals from the science, engineering and mathematics community serve as role models and mentors.

SSC-9252762
Kathleen Sullivan
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"The Mathematics and Physics of Water: A Summer Activities Camp"

Heritage College and Seattle University jointly conduct a four-week summer commuter/residential mathematics and physics camp for ethnic/racial minority girls entering the eighth grade, with follow-up activities throughout the subsequent academic year. The targeted populations are Native American and Hispanic girls from the agricultural Toppenish area, and African-American girls from the urban neighborhoods near Seattle University. The program, which involves 50 participants each summer in the summers of 1992-1994, serves students who are able and well-motivated but who might well lose interest in science and mathematics without special attention. Activities include: 1) small group daily interactive activities and experiments at each campus site on topics such as fluid flows, waves, and water quantity and quality, supplemented by field trips and guest scientists, primarily women; and 2) field experiments at a residential lakeside science camp.

SSC-9252773
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"Yukon Delta Environmental Education Camp"

This summer residential camp which accommodates 30 ninth grade Native

Alaskans per year, is located in a remote site near Bethel, Alaska, in the heart of the Yukon Delta National Wildlife Refuge. This is an area with a great need for the collection of basic biological data. Students will be immersed in a variety of research projects, collecting needed data to answer existing questions. Program staff and the Native Elders-in-Residence will help stimulate questions and provide insight into the natural history of the area. Students will prepare a final report of their research and will also visit an actual field research station and assist with activities there.

SSC-9252775
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"Terra: An Environmental Summer Science Camp"

Eugenio Maria de Hostos Community College and Cornell University Cooperative Extension collaboratively designed this environmental summer science camp in which fifty African-American and Hispanic ninth grade students per year will participate in innovative, inquiry-based scientific projects and learn about careers in science, engineering, and mathematics. Through hands-on laboratory activities, participants will learn about the deterioration of the environment as it affects land, air, and water resources, and the role of scientists and engineers in protecting and reversing this environmental damage. Utilizing New York City's natural resources as well as its professional scientists, engineers, and mathematicians, students will also learn about science from a socially responsible and ethical perspective. TERRA brings together practicing scientists, college faculty, and high school teachers to challenge and motivate minority ninth graders to stay in school, take additional courses in high school, and learn about career opportunities in these fields.

SSC-9252780
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"Young Engineers & Scientists (Y.E.S.) Summer Science Camp"

The Y.E.S. Summer Science Camp is a six week commuter mathematics and science program along with a follow-up academic year program. The program serves two hundred and twenty-five seventh through ninth grade African-American, Hispanic and Native-American students over a three year period. The objectives of the program are to: 1) introduce students to science, engineering and mathematics concepts in a culturally relevant manner; 2) teach students how academic coursework relates to their futures; 3) show students how science, engineering and math relate to the world around them; and 4) help parents become better informed and actively involved in the education of their children. The program involves volunteer scientists and engineers from local industry and San Francisco State University. Program activities include: Science, computer science, mathematics and communications courses, guests speakers, laboratory demonstration experiments, field trips and group research projects. During the academic year, students participate in the existing MESA Program at their school site.

SSC-9252797
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"Science, Technology Enrichment Program (STEP)"

This program offers a three-week summer institute of courses in mathematics and science which are designed to reinforce students' understanding of science while also encouraging creativity by having them work on selected topics and projects. The academic year component continues students' explorations through sessions with visiting scientists, special activity groups and field trips. Eighty students will participate each year. Major goals of the program are to: 1) encourage students to continue taking the critical mathematics and science courses during their secondary education; 2) create an awareness

within the community for talented students to pursue careers in these areas; 3) create a cohort of students who share similar interests; 4) ensure that these students proceed to higher education; and 5) increase the probability that these students will pursue a career in mathematics and/or science.

SSC-9252799
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"University of Washington Technology Camp"

The Technology Summer Camp provides an environmental science and engineering program for rising ninth grade African-American, Hispanic, Native-American and Pacific Islander students. The camp involves students, through group interactive activities, in the excitement of the process of science and engineering and will expose them to a wide variety of career options and mentoring experiences. The program's goal is to encourage students to pursue rigorous math and science training in high school and to begin considering the many options for scientific and technological education at the university level, as well as to make students more aware of science and technology as a social endeavor.

SSC-9252805
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"A Native American Summer Science Camp"

This camp, designed for Native American middle school students, focuses on engineering, including electrical, ocean, civil, and mechanical engineering. Students will design wooden flutes, canoes, model airplanes, and bridges. The projects are chosen in part to have some grounding in Native American culture. The camp is integrated into a local ongoing American Indian Science and Engineering Society program which will keep the students in close contact with students and faculty at the University. The camp includes field trips to nearby museums and industrial organizations and involves parents and the community through Native American story telling activities.

SSC-9252807
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"Minority Student Summer Science Camp"

The goals of this Summer Science Camp are to generate and maintain an interest in science and mathematics among African-American and Hispanic students and to encourage them to consider careers in science and mathematics. Sixty rising seventh, eighth, and ninth grade minority students from Knoxville, Chattanooga, and other areas of East Tennessee will participate in this camp. The program focuses on both life and physical science, thus exposing them to two major divisions of scientific inquiry. Mathematics, as well as other discipline areas are integrated into the four-week residential program. The life science component focuses on population studies; the physical science component focuses on the science and mathematics of several aspects of daily living and recreation. Biology, mathematics, geology, chemistry, physics, money management, and nutrition are integral facets of both project areas. Students participate in hands-on research activities interspersed with discussions related to their activities. In addition, students participate in career guidance and counseling activities, learn to write and present a formal report, practice good study skills, are exposed to motivational programs, and interact with role models from a variety of settings. During the four-week camp, activities will also be offered for parents and siblings. Instructors are experienced college and high school staff members, practicing scientists and mathematicians, and high school students. Follow-up activities during the academic year will be on a bi-monthly basis.

SSC-9252818
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"MESA Success Through Collaboration Summer Science Camp"

MESA's Success Through Collaboration program expands to offer a science and mathematics summer camp for 40 American Indian middle school students from throughout California per year. Held on the California Polytechnic University campus in San Luis Obispo and centering on an environmental theme, the camp is designed to: develop a community of academically oriented rural and urban Indian students; excite students about science, mathematics and engineering and the career possibilities in those fields; bolster self-esteem; demonstrate leadership training; increase critical thinking and communications skills; and deepen students' commitment to remain in school and obtain a college degree in science, mathematics or engineering. The instructional approach includes cultural activities imbedded in an interdisciplinary environmental curriculum of hands-on mathematics and science and is facilitated by undergraduate role models and small group cooperative learning. Students will complete environmental projects and present them through a conference-like forum to parents and peers.

Professors and practicing engineers and scientists provide career counseling. Academic year follow-up includes activities in MESA Academies, field trips, and guest speakers and MESA Clubs. Camp graduates subsequently become members AISES and interact with AISES university student mentors.

SSC-9252819
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"Summer Science Camp for Rising Seventh Grade Underrepresented Students"

The Hampton University sponsors a four-week Summer Science camp annually for the same group of forty-eight rising seventh grade minority students. Program activities include: 1) instruction in geometry, probability, statistics in experimental mode with emphasis on scientific research methodology, supplemented with problem solving, problem-solving techniques, graphic calculator and computer usage; 2) enrichment experiences such as study skills and writing for success in mathematics; alleviation of mathematics anxiety; guest speakers who discuss career options in mathematics and local field trips to business and professional operations. Parents play an active role by providing after school and weekend help for the student on the basis of their own program orientation training. Follow-up activities include minds-on, hands-on activities developed and presented by students using the skills and techniques acquired during the summer program as well as additional classroom-laboratory activities.

SSC-9252820
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"Summer Science Camp"

The New Jersey Institute of Technology Summer Science Camp provides a four week commuter camp with academic year follow-up activities for seventy-eight seventh grade, low income, educationally disadvantaged African-American and Hispanic students from Newark public schools. Instruction is provided in science and math, based on the theme of Marine Science, oral and written communication skills, as well as four field trips to various marine science locations in New Jersey. In addition, students receive academic, financial and career counseling and are exposed to formal and informal interaction with minority and women professors and students already engaged in science based careers. Parents-guardians are involved throughout the program. Project partners include: The Newark Board of Education, The New Jersey Marine Science Consortium and The Protestant Community Center, Inc, a community based parent organization. Follow-up activities will be carried out during each academic year which provide additional math/science opportunities, academic and career counseling, and monitoring of student progress.

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"Engineering and Science Summer Program"

The objective of this program is to demonstrate to African-American and Hispanic students in the Calumet region the real life relevance of and opportunities in engineering and science. This is a five-week summer program for students completing grades 6, 7, and 8 with follow-up activities in subsequent years. This is a cooperative effort between Purdue University- Calumet and Gary and East Chicago school systems. The key feature is the structure which ties math, science, and applications together; thus topics are chosen so that the participants see the importance of math as a basic tool, and its application to engineering and science. Hands-on laboratory and computer usage sessions and industrial tours are provided.

SSC-9252844
Henry Teoh
SUNY AT OLD WESTBURY
Chemistry and Physics Department
Old Westbury, NY 11568

"Summer Science Camp"

The camp at SUNY/College at Old Westbury extends the summer program, established six years ago, for minority high school students to fifty African-American and Hispanic middle school students (grades seven through nine) per year and admits them to the Science Training and Education Program (STEP). Activities in the four-week summer camp include intensive instruction in mathematics, communication skills, and computer science and analytical skills usable in developing research oriented science projects. Students are exposed to career exploration activities such as science projects. Students are exposed to career exploration activities such as field trips to industries, government laboratories and college research labs complete with pre-tour briefing, post- tour evaluations and informal meetings with scientists, along with mentoring by college role models. Group workshop strategies for reinforced learning, motivation through team competitions, a supportive climate, experienced staff and carefully chosen courses tailored to students' needs are the key elements of this SSC. Programs which assist students in developing positive attitudes towards SEM careers, increase their academic confidence and encourage parent participation in education are incorporated.

SSC-9252858
Lila Denoya
SUNY AT FREDONIA
Department of Education
Fredonia, NY 14063

"Pathways of the Math and Sciences Summer Program"

The State University of New York College at Fredonia sponsors the "Pathways of Mathematics and Sciences Summer Project" for minority students annually from three target schools. This five-week commuter project provides unique learning experiences in mathematics and science to encourage students to continue the study of math and science, to realize the importance of these subjects in their everyday lives and appreciate that both are interesting and enjoyable. The summer project has three modules: I) Knowing the Coursework; II) Knowing Yourself; and III) Knowing the School System. The mathematics content includes science content such as ecology, environmental geology and mineralogy. Instructional activities involve hands-on, independent study, intensive lab use, work stations, and field trips. Problem solving, communication, reasoning, and connection provide students with stimulating conditions for learning mathematics and science. Community and institutional support are strong.

SSC-9252876
William White
JACKSON STATE UNIVERSITY
Department of Mathematics
Jackson, MS 39217

"Summer Science Camps for Seventh and Eighth Graders at Jackson State University"

The Summer Science Camp Program is designed to rejuvenate the student interest in natural science and mathematics at an early age. Annually, forty-eight seventh and eighth grade African-American students are exposed to natural sciences, mathematics, communication skills and computer science in an intensive four-week residential summer session at Jackson State University (JSU). Activities include

classroom instruction and laboratory demonstrations-experiments and involve individual as well as group interaction with communication skills (oral and written), applications of mathematical concepts, and computer applications. Upper level science technology students serve as mentors for the participants and continue this contact throughout the academic year as well as actively assist the instructors. In addition, speakers from local industry and JSU serve as invited speakers; students take field trips to science museums, planetariums and Federal laboratories. Students will participate in similar programs until grade twelve and will be tracked throughout their academic career.

SSC-9255105
Bruce Munson
UNIVERSITY OF MINNESOTA-DULUTH
120 Montaque Hall
Duluth, MN 55812

"Native American Summer Science Camp"

Ninety seventh and eighth grade American Indian students participate in summer science camps offered at three different locations in the Upper Midwest: Duluth, Minnesota, Green Bay, Wisconsin, and Tama, Iowa. The camp curriculum focuses on natural resource management issues and American Indian traditions Participants conduct scientific research projects in cooperative groups and discuss scientific research with professional scientists (including American Indian role models). The program integrates science, mathematics and communication skills through this informal camp setting. Project follow-up includes participant newsletters that discuss school science and math topics and their relevance to the summer camp experiences as well as visits to camp locations for seminars with parents and participants.

SSC-9255106
Jerry R. Shipman
ALABAMA A&M UNIVERSITY
Department of Mathematics
Normal, AL 35762

"Summer Science Camp at Alabama A&M University"

The Summer Science Camps at Alabama A & M University provide African-American students entering grades 7-9 with innovative activities designed to provide: 1) a foundation for influencing their interest in science and mathematics; 2) positive attitudes toward staying in school and continuing the study of science and mathematics; and 3) encouragement to consider science, engineering and mathematics disciplines as possible career choices. The SSC activities include a combination of enrichment instruction and laboratory experiences in science and mathematics, problem solving experiences, experiences in developing strong study and communications skills, exposure to research methodology, experiences designed to improve self-esteem and motivation, and career exploration emphasizing student interactions with scientists, engineers and mathematicians.

SSC-9255109
Benita Bell
BENNETT COLLEGE
Department of Chemistry
Greensboro, NC 27420

"Bennett College Summer Science Camp"

Bennett College offers a six-week commuter and residential Summer Science Camp for the same fifty local African-American seventh through ninth grade minority youth on the Bennett campus. The camp and academic year follow-up activities feature classroom, laboratory and enrichment activities, provide self-paced mathematics and sciences instruction, individualized tutoring, outreach services, mentoring, life management skills development, parent involvement, and appropriate support systems and utilize audio-tutorial and computer assisted instructional techniques.

SSC-9255110
Shirley Binder
UNIVERSITY OF TEXAS AT AUSTIN
Office of Admissions
Austin, TX 78712

"University Outreach Centers Summer Science Camps"

The University of Texas at Austin conducts three series of Summer Science Camps annually for 150 African-American and Hispanic youths entering the eighth and ninth grades. Designed to build a coherent and solid foundation among minority middle schoolers for an interest in and understanding of science and mathematics, these programs are presented in the context of existing Outreach Centers established by the

University in major concentrations of target minorities in Austin, Dallas, and the Rio Grande Valley. The SSC environment and activities are designed to bring the participant into immediate and personal contact with the people and "things" of science, mathematics and technology by having them participate in a wide range of research processes and interacting with active mathematicians, engineers and scientists. The focus of each of the SSC's curricula is embodied in a major yearly theme for each site that is derived from the particular nature of local student populations and the available resources of that area (e.g. basic foundations, robotics and space technology, ecology plant/animal study, and agribusiness and genetic engineering, etc.). SSC student participants will interact with teachers trained in teacher enhancement programs, thus matching the middle schoolers with trained science and mathematics teachers that they will likely encounter in upper middle and high school. The ultimate designed outcome of this interaction is the creation of "student-teacher allies" in the academic-year classroom who are bound together by both shared interest and common experience in the science and mathematics learning process.

SSC-9255125
Winson R. Coleman
UNIVERSITY OF THE DISTRICT OF COLUMBIA
Office of the Director
Washington, DC 20008

"Summer Science Camp (SSC)"

This program expands the existing Science and Engineering Center's pre-college program to include sixty seventh and eighth grade minority students in a summer academic intervention commuter program. Activities provide a non-traditional learning environment that allows for participant acquisition of knowledge from hands-on mathematics, computer science and electrical engineering instruction. Participants in this program will also participate subsequently in the Physical Science Institute, a science program for ninth through twelfth grade students.

SSC-9255134
Christine J. Faltz
MARQUETTE UNIVERSITY
Upward Bound Project
Milwaukee, WI 53233

"Summer Science Camps"

The Marquette University Equal Opportunity Program (EOP), together with the College of Engineering, offers a 4-week Summer Science Camp Program that provides enrichment experiences in science, engineering and mathematics for 48 middle school minority students, plus academic year activities at Marquette and in three area middle schools. Activities include: 1) exploration of "The Wonderful World of Robotics" through hands-on discovery and demonstration activities in civil, mechanical, electrical and computer engineering; and 2) construction of a LEGO/TC robot to accomplish a task of their choice. Academic year follow-up activities include: 1) Science Saturdays at the MU College of Engineering; 2) Science Clubs; 3) one-on-one assistance with students' science fair projects; and 4) participation in a mini-science fair at MU. Both summer and academic year programming provide career exploration, college planning, and personal development components designed to inform and motivate middle school students about preparing for careers in science, engineering and mathematics.

SSC-9255135
Dale F. Reed
LOYOLA UNIVERSITY AT CHICAGO
Department of Mathematical Sciences
6525 N. Sheraton Road
Chicago, IL 60626

"Loyola/Aspira Summer Science Camp"

Loyola University Chicago, in conjunction with Aspira of Illinois, offers a bilingual (English/Spanish) six week, commuter Summer Science Camp integrating computer science, engineering, and physics for rising seventh through ninth grade "High ability/low opportunity" Hispanic students. A subsequent academic year follow-up program is also provided. The interdisciplinary activities begin with students being introduced to basic computer architecture, after which they assemble IBM-compatible microcomputers for subsequent use in the program. Students are guided through experiments in three district labs: Digital electronics, engineering design and control, and computer science programming, where

computer concepts are introduced through programming in the Pascal language. Summer sessions include career-oriented field trips to the facilities of Argonne National Laboratories, Northwestern University, Chicago Research & Trade (a securities trading firm), and People's Gas. Students earn high school course credit through the gifted program of the Chicago Public Schools.

SSC-9255175
Carolyn Mahoney
CALIFORNIA STATE UNIVERSITY AT SAN MARCOS
College of Arts And Sciences
San Marcos, California 92696-0001

"Middle School Mathematics and Science at San Marcos (MS)2(SM)"

"Middle School Mathematics and Science at California State University San Marcos" ((MS)2(SM)) is a summer camp initiative sponsored by California State University San Marcos in collaboration with the public school districts of Escondido, Oceanside, San Marcos, and Vista. This academically based enrichment program offers mathematics and science related activities to develop and sustain the interest of seventh through ninth grade African-American, Hispanic, Native-American, and Pan-Asian students in north San Diego County. Each summer the students attend a four-week institute taught by local science and mathematics teachers and college or university scientists and mathematicians. Students use calculators and computers as they develop the critical thinking and problem-solving skills that form the basis for scientific work. During the summer and academic year, participants take field trips to interact with scientists in a variety of work settings and are mentored by local college students and academic or industrial scientists. Project results will be disseminated through professional education networks, submission of articles to refereed journals, and presentations at local, state and national meetings.

SSC-9255216
Michael A. Johnson
SCIENCE SKILLS CENTER
80 Underhill Avenue
Brooklyn, NY 11238

"SSC: The Science Skills Center Summer Science Camp"

Founded in 1979, the Science Skills Center (SSC) is a non-profit community based program which encourages young minority and female students to pursue careers in science, mathematics, and technology. At its current two sites in Brooklyn, N.Y., approximately 400 students, ages six to eighteen, are enrolled in programs where they take accelerated courses in biology, chemistry, physical science, rocketry, oceanography, botany, and mathematics. This summer science camp expands two of the existing sites to include an additional total of one hundred and fifty African-American and Hispanic middle school students. At one site, the Summer Science Institute, a group of students spend one week in each of six areas (i.e. chemistry, biochemistry, biology, botany, computers, electronics and chess/mathematics). Students also take weekly field trips to museums or engineering firms. At another site, the Science Skills Center and IBM have developed an engineering BASE (Building Access to Science Enrichment) program, a program whose goal is to expose talented minority youth to careers in engineering. Students get to observe first-hand science principles at IBM's Brooklyn facility and receive instruction from IBM engineers in several courses including systems architecture, chemical and electrical engineering and computer science.

Directorate for Education and Human Resources
Division of Human Resource Development

Summer Science Camps (SSC) 1993
Project Abstracts

SSC-9350528
UMDNJ-New Jersey Medical School
Newark, NJ
Gona, Ophelia

"NJMS Summer Science Camp"

As a means of stimulating minority youth to stay in school and pursue careers in sciences, engineering or mathematics (SEM), a multidisciplinary Summer Science Camp for rising ninth graders will be conducted at the New Jersey Medical School. Specific objectives address the acquisition of certain SEM skills and familiarity with professions and professionals of these disciplines. The camp will provide an almost total immersion and integrated experience in SEM for participants. A novel, Fantastic Voyage, by Isaac Asimov, will provide the central theme for camp activities which will include: field trips, visits with SEM professionals, hands-on experimentation and exploration, and computer use.
Built into the design are activities to encourage and enhance basic skills. Numerous opportunities will exist for campers to meet SEM professionals. Various activities will explore the training necessary for SEM careers.

Parents will be active home partners in their children's summer experience and will have opportunities to visit the camp and take field trips with campers. Participants will be academically capable minority students. Staff will include the Director, Counselors (teachers from local high schools), and Junior Counselors (rising college freshmen who have interest and ability in the sciences or mathematics), all of whom will be underrepresented minorities. Achievement of the camp's objectives will be assessed by techniques such as pre-and post-testing, anecdotal records, etc. Long-term monitoring and follow-up of participants will be achieved by academic-year Science Days and by biannual communication with parents and participants for four years following the camp experience. Long-term goals are for participants to graduate from high school four years after the camp experience, to attain a grade of B or better in each of three high school science courses and three mathematics courses, and to be admitted to a college at the end of high school with a major in one of the SEM disciplines.

SSC-9350547
French River Education Center, Inc.
N. Oxford, MA
Hamadeh, Ann, Lou Horner, Michael Fields, Bernard Brown, and Josephine Corro

"On DEC 2000" Summer Science Academy

This project conducts the "On DEC 2000" Summer Science Camp, a four-week science enrichment and career exploration project designed for fifty Black inner city seventh grade students. The project represents an alliance between the Boston Public Schools and, among others, Digital Equipment Corporation, in which students participate for three consecutive summers. Students are exposed initially to careers in chemistry, physics, astronomy, engineering, and computing technology, through hands-on activities, guest speakers, mentors, and field trips to area universities and colleges. Returning students will select three of these courses for in-depth study in the second year, while third year students enroll in the course that most interests them and devote the entire summer to its study. New "freshmen" classes are recruited annually. Academic year follow-up activities include after-school science clubs and a "Science by Mail" program with the Boston Museum of Science.

SSC-9350557
Delaware Valley College S&A
Doylestown, PA
Mertz, John

"SSC-Pre-Freshman Enrichment Program"

Delaware Valley College's PREP Initiative is an enrichment program which will target average achieving seventh and eighth grade students who have been traditionally underrepresented in the areas of mathematics and sciences. The College has collaborated with four Philadelphia School District Middle Schools for student and staff recruitment. Each of the four schools will identify a maximum of fifteen students per school. A four week summer encampment at the Delaware Valley College will provide students with the opportunity to engage in group and individual educational programming. Parental participation is an essential component of program activities. The thematic educational focus is on environmental issues. Through the emphasis on the environment, students will learn basic scientific, mathematical and communication skills. In addition, an on-going sub-theme will be career development/ exposure. This component will be carried out in follow-up activities as well, which will include mentoring visits to the four schools and evaluative activities.

SSC-9350559
University of South Carolina
College of Science & Math
Columbia, SC
Durig, James R. and Timothy S. Little

"University of South Carolina-Summer Science Camp"

This project conducts a four-week residential camp for forty-four Black eighth- and ninth grade students from rural areas. The camp is held on the Columbia campus and on Pritchard's Island. The project focuses on instruction in life-, earth-space, and physical sciences and includes mentoring by faculty and graduate students as well as academic-year follow-up. It is consistent with statewide efforts to restructure science and mathematics education at the K-12 levels and is located in the same region as the undergraduate level Alliance for Minority Participation (AMP) at the University of South Carolina.

SSC-9350563
Detroit Area Pre-College Engineering (DAPCEP)
Detroit, Michigan
Hill, Kenneth, Arthur Haman, and Mark Thomas

"DAPCEP-University of Detroit Paper Vehicle Project"

The Detroit Area Pre-College Engineering Program (DAPCEP) and the University of Detroit- Mercy conduct a five-week commuter summer camp for fifty seventh- through ninth-grade African-American and Hispanic students annually. The camp focuses on the design and building of a full-size vehicle made of paper products. The curriculum is based on the Paper Vehicle Project written by engineers at General Motors. Students learn engineering concepts and take field trips to an automobile assembly plant and proving ground. The project includes mentoring by professionals in industry and area high schools as well as parental involvement.

SSC-9350572
Texas A&M Research Fdnt.
College Station, TX
Sturdivant, Karon, John Giardino, Juan Valdes, and Rodney Paris

"Camp Planet Earth: A Summer Environmental Science Academy"

The goal of the Texas A&M University Camp Planet Earth: Summer Environmental Science Camp is to increase the number of African American, Hispanic, and Native American students from educationally, disadvantaged backgrounds who succeed in college preparatory courses in mathematics and science during their high school years and then to enter these disciplines of study at the college level. Participants will work in a stimulating, non-threatening educational environment with professors as mentors and Texas A&M University graduate students as well as selected former Camp Planet Earth students serving as mentors and peer role modes. Through a variety of instructional activities at Texas A&M University and the actual field

experience, participants will obtain knowledge and skills related to the scientific investigation of the environment of Planet Earth; develop a strong interest in pursuing careers in science and increase their knowledge of the educational preparation required for such careers; develop academic skills for their high school studies through sessions which focus on strengthening their skills in reading, writing, and communications with particular emphasis on helping students develop good study skills for mathematics and science courses; and develop an increased level of pride and appreciation in their ethnicities and cultural sensitivity to other ethnic groups.

Environmental science has been selected as the focus for the Camp because it integrates a number of scientific disciplines: geology, meteorology, biology, chemistry, geography, physics, engineering, and mathematics. This interdisciplinary approach is based on the strong belief that the environment can best be understood by the application of general systems theory to planetary processes. The approach requires that Camp participants consider the planet from a holistic point of view and emphasizes the idea of linkages between the subsystems of the earth as well as the various components and elements of the subsystems.

After two weeks of classroom instruction, at the university campus, the participants, camp faculty and staff will travel to the program's field camp in Alamosa, Colorado. The camp will be a combination of an academic experience and an "outward-bound" adventure.

SSC-9350576
Oklahoma State University
Stillwater, OK
Harker, Alan

"Exploring Contemporary Biological Dilemmas"

The NSF Summer Science Camp will be executed within a larger ongoing program to enhance recruitment and retention of Native American students in the biological sciences. It will employ an investigative approach to a local environmental problem. Interdependent research groups of students will focus on different areas of a common problem and cooperate to propose a solution. The proposed research will combine field and laboratory components. The environmental emphasis will allow students to focus on many disciplines including: life sciences, physical sciences, statistics, engineering, economics, as well as libary, writing, and presentation skills. The groups will attend joint meetings once each week to inform others of their progress, share information, and offer suggestions. Students will see how the various disciplines work together using technology to meet the needs of society.

Local industry, community, and university professionals will provide diverse presentations on relevant research activities and career opportunities. Local tribes will provide cultural evenings and speakers to address issues relative to the preservation of culture, traditional ways, and tribal views of the environment and science. Advisory boards composed of parents, tribal leaders, teachers, and administrators within the cooperating tribes and school districts will coordinate recruitment of participants. Summer Science Camp activities will be coordinated with school year programs established within the larger program. These include science clubs, equipment loans, speaker programs, problem-oriented curriculum development, etc.

SSC-9350580
The Science Place
Dallas, TX
Sudduth, William, Elizabeth Mooz, and Charles Hafey

"Summer Science Camp"

The Science Place (TSP) Summer Science Camp (SSC) is designed to provide a six-week program to minority middle school students by emphasizing scientific and computer instruction, exposure to scientific research, career exploration, communication skills, family involvement, and student contact with scientists and engineers. The program is a collaborative effort involving TSP staff, Dallas Independent School District (ISD)

students, the YMCA of Metropolitan Dallas, and the D.C. James Learning Center. Several scientific modules will be used depicting: physics, the environment, electricity, astronomy, biology and math. Students will aslo be exposed to visiting scientists, career opportunities, and physical education. During the SSC, student teams will select one area of special interest, write a report and give an oral talk at a family camp-in at TSP. Students will be encouraged to continue contact with TSP throughout the year with a complementary TSP membership. Students will be tracked for their progress by the DISD, encouraged to educate their peers and maintain their interest in science by volunteering at TSP.

SSC-9350581
University of California-Berkeley
Berkeley, CA
Morrison, Frank H.

"Summer Science Camp-MESA Project"

The six-week SSC project will provide instructional support for 60 Bay Area 7th, 8th and 9th graders in the SSC-MESA (Mathematics, Engineering, Science Achievement) Project at the University of California, Berkeley and as part of the MESA Saturday Academy.

Program participants will reflect the rich cultural and ethnic diversity of the Bay Area which includes African-Americans, Chicano/Latinos, American-Indians, and Puerto Ricans.

The primary objectives of the proposed SSC-MESA Project are to introduce students to engineering and science concepts, demonstrate how academic course work relates to their future, how science and engineering relate to the world around them, and to have parents become informed and actively involved in the education of their children.

To meet its objectives, the SSC-MESA Project includes morning mathematics and communication courses, afternoon engineering and science projects, and a "shadowing" program, where students will meet with mentor scientists and engineers. The academic-year program includes; 1) a Saturday Academy (9 sessions each semester); 2) after-school math and science workshops for students who attend MESA schools and 3) evening and Saturday meetings that provide parents and students with information on college entrance requirements, financial aid, the transition from middle school to secondary school, and career options in science and engineering.

SSC-9353152
Harvey Mudd College
Claremont, CA
Tanenbaum, Samuel B

"Harvey Mudd College Summer Science Institute"

The Harvey Mudd College Summer Science Institute will provide a commuter summer science program targeted to underrepresented minority students in grades 7 and 8 from the surrounding local school districts. The five week program will offer students the opportunity to explore five different science and engineering topics in-depth, and give them hands-on experience in highly motivating projects especially designed to excite the enthusiasm of junior high students. Students will also interact with representatives from industry and selected members of the Harvey Mudd faculty and student body. Follow-up activities during the academic year are designed to further motivate the students to continue their studies of science and mathematics, and ultimately pursue careers in technical fields.

SSC-9353154
Jefferson County Public Schools
Louisville, KY
Hardin, Howard

"Science With A Twist - Technology Education Attracting Minorities (SWAT TEAM)"

The Jefferson County Public School (JCPS) District's SWAT TEAM is a precollege project that focuses on developing African-American middle-school students' interest in science and mathematics, engineering and other careers requiring knowledge and skills in science and mathematics. The project also encourages the students to enroll and achieve in science and mathematics during their tenure in high school.

SWAT TEAM consists of three consecutive 4-week, 5-day summer camps, with school-year follow-up activities. Extending over a three-year period, each year the camps will enable 50 African-American middle school students to participate in classroom and field learning experiences. The students will learn about environmental science and structural design, biological science, and aviation and aerospace dynamics.

They will engage in the scientific methods of observation, data collection and analyzation, and draw conclusions through the use of non-hazardous performance events. They will use microscopes and computer technology, where appropriate, to complete hands-on learning experiences.

Career exploration will be a part of each instructional activity. Students will interact with African-American chemists, engineers, pilots, etc. to explore careers that require science and mathematics.

The success of the project will be based on the students' ability to perform events using science and mathematics, their increased interest in science and mathematics, their perceptions of their learning experiences, and follow-up data showing compentance in the science and mathematics courses taken by the students in high school.

SSC-9353155
Black Child and Family Institute
Lansing, MI
Vance, Irvin, Mozell Lang, and John Pollard

"Michigan Summer Science Camps"

Michigan State University Mathematics Department, in collaboration with the Mathematics and Science Program of the Michigan Department of Education and the Black Child and Family Institute of Lansing, offers a five-week summer science camp project combined with an academic year program for underrepresented minority students. This is a statewide program with science camps offered in two Michigan sites each year. One in Lansing/East Lansing, and the other one in Pontiac. Each site operates with its own staff but with a common set of goals and a common disciplinary focus. A professional development workshop for staff precedes the camp.

The young people served include African-American, Hispanic-American and Native-American students seventh- through ninth-graders from the Lansing and Pontiac areas. Two commuter camps, each enrolling 75 students, are held. In addition, a five-day residential camp with an environmental focus is held at the Kellogg Biological Station at Gull Lake. Students receive instructions in mathematics, science, and environmental and computer science. Parents of participants attend selected sessions and work periodically as program volunteers.

Nine Saturday morning sessions for participants are held at each site during the academic year. A recognition program for all participants, funded by Macmillan/McGraw Hill Publishing Company, will be held at Michigan State University in the spring of each year. The summer science camp program will address the need for a scientifically literate population and reversing the declining aptitude, interest and participation in science by underrepresented groups.

The science camps offer: 1) An environment, conducive to learning science and mathematics, with tools, resources and expert teachers; 2) mentor relationships to nurture skills and predisposition for science and mathematics; 3) four-week commuter summer science camp plus a one-week residential camp with opportunities to practice science and mathematics with a problem-solving, exploratory approach; 4) a series of half-day Saturday programs, one each month during the academic year, 5) strong parental involvement to support and guide the interest and direction of the child.

SSC-9353157
Southwest Texas State University
San Marcos, Texas
Kroschewsky, Julius

"Summer Science Camp - Southwest Texas State University"

Southwest Texas State University conducts the "Hands-on Aquatics Summer Science Camp" for fifty seventh grade Black and Hispanic students from rural central Texas annually. The project emphasizes the interdisciplinary relationships among biology, chemistry, physics, geology, mathematics and computer science through carefully selected field and laboratory experiments and observations focusing on the fresh-water environment in the nationally acclaimed San Marcos River. The project includes career counseling, daily role model interaction with Black and Hispanic students, faculty, and practicing scientists, and hands-on research experience.

SSC-9353162
Purdue University
West Lafayette, IN
Todd-Hicks, Regina and Joseph Vanable

"Minority Middle School Summer Science Program"

The primary objective of this project is to stimulate minority Middle School students to develop an interest in and a facility for science, and as a result, to choose science as a career. A related secondary objective is to stimulate Middle School teachers to reinvigorate their teaching efforts in their home institutions.

To achieve these objectives, 50 underrepresented minority students from major Indiana cities and eight of their teachers will be selected for a summer program on the West Lafayette campus of Purdue University. The students will have finished the 7th grade and must show promise for achievement in science and mathematics. The program will be held for four weeks, and will progress through a three-year cycle, each successive year building on the previous one. At the end of the cycle a new cohort of students will be recruited. To replace those lost by attrition during a cycle, new students will be recruited for the 2nd and 3rd years from students who have completed the 8th and 9th grades, respectively. Parents will be an integral part of the program; they will attend workshops at various points of the program that focus on their role in helping their sons and daughters to choose a career, and in sustaining their educational efforts.

The summer program will use several approaches: (1) Inquiry-based lecture/discussion/laboratory experiences that focus on interesting aspects of four areas of science: Biology, Chemistry, Earth & Atmospheric Sciences, and Physics (one per week each year). Although there will be no Mathematics or Computer Sciences per se, these disciplines will permeate the four subjects chosen. These experiences should increase the students' knowledge of these areas, but more importantly, they should engender a sense that doing science is a quest, rather than merely memorizing "facts." This point will be reinforced by the middle school teachers of these students, as well, as they participate in the lectures, laboratories, and discussions; (2) Opportunities for careers in science will be identified during the daytime lecture/ laboratory/discussion sessions, and by visits to laboraties on and off campus. Career exploration and evaluation will also be an important part of evening sessions held in the dormitories, both with university staff and with representatives from industry. Particular emphasis will be given to pointing out the issue of underrepresentation of minority persons in science, and highlighting the contributions of minority scientists, both past and present; and (3) Help to encourage analytical thinking and help to develop strategies for academic success not only in the lectures, lab activities, and discussions during the day, but also by various means in the evening sessions (e.g., sharpening reasoning powers in the context of enjoyable games; exploring test-taking skills; and emphasizing the value of studying in groups).

SSC-9353164
Miami University at Oxford
Oxford, OH
DeLoach-Johnson, Iris, Anita Roychoudhury and Nate Carnes

"MiamiUniversity-Science-Engineering Mathematics Project (MU-SEMP)"

Miami University's minority summer science camp, referred to as Miami University-Science Engineering Mathematics Program (MU-SEMP), is carefully designed to build upon the experience of its principal investigators, to extend the scope and effectiveness of two major projects in Southwestern Ohio, and to provide a holistic approach to developing in minority youth the knowledge and skills needed for entrance to and retention in the scientific and technological pipeline. The project's location (Oxford, Ohio) will allow it to recruit from the large concentrations of minority, specifically African-American, youth in the Cincinnati and Dayton metropolitan areas as well as from minority youth who are isolated in rural schools surrounding those urban areas.

In order to reach its goal of assisting people of color in becoming more active members of the science, engineering, and mathematics pipeline, both as American citizens and as potential employees in related career fields, MU-SEMP will combine inquiry-based content courses in science, mathematics, and computer science with a supportive living and learning environment for four weeks. Students will also attend field trips, receive training in technical writing, communications, and research and study skills. Guest speakers who work in science, engineering, and mathematics careers will also provide reflections from the real world. Furthermore, in order to assure that the supportive environment continues after the duration of the camp, parents as well as college students, college faculty, and middle and high school teachers will be involved as staff and mentors.

MU-SEMP will build upon and expand the strengths of two systemic initiatives in its geographical area. First, Ohio's Statewide Systemic Initiative is also located at Miami University, and MU-SEMP will use teachers trained by Discovery as well as adapt Discovery materials and curricula. In addition, Discovery teachers will have opportunities to work with MU-SEMP youth while both groups are in residence in the summer. MU-SEMP staff have been involved previously in developing and teaching Discovery courses. Second, Minorities in Mathematics, Science, and Engineering (M2SE), one of the regional Alliances for Minority Progress centers is located in Cincinnati. Recruitment, sensitivity, and retention techniques used in that project will be adapted for the young teenagers who participate in the summer science camp. Two of the project's investigators have also been trained by this program. In summary, by combining rigorous education in science and mathematics with a supportive, pleasant, residential environment, MU-SEMP will attract, motivate, and retain more minority students in the education pipeline.

SSC-9353171
CUNY John Jay College
New York, NY
Christ, Lily and Edward Green

"John Jay Summer Computer Camp"

The John Jay College Summer Computer Camp (JJSCC) is an academically intensive five week summer program followed by an academic year component with mathematics as the curricular focus. This program is modeled after the TexPrep curriculum, with some modifications to suit the local conditions. The target population for JJSCC is students entering grades 7-9 from selected schools in New York City.

The Program consists of: (1) a structured schedule from Mondays through Thursdays during the summer including courses in computer science, logic, probability and statistics, and problem solving; and (2) informal field trips, hands-on project workshops, and SEM career counseling on Fridays during the summer and six Saturdays during the academic year. Guest speakers serve as role models and provide the participants with personalized exposure to the multitude of career opportunities in the fields of

science, engineering, and mathematics (SEM).

The curriculum emphasizes the students' development of abstract reasoning and problem solving skills. All courses will be taught by using "team-teaching" and "cooperative learning" techniques. Students will be encouraged to work together and to utilize peer-tutoring by establishing "Academic Fraternities". Computers and calculators will be an integral part of the program.

The John Jay Summer Computer Camp will enroll 35 students in JJSCC I the first year and 55 students in each of the second and third years.

SSC-9353177
National Aquarium in Baltimore
Baltimore, Maryland
James, Sylvia M. and Retina S. Jagan

"Junior Aquarist Summer Science Camp"

The National Aquarium in Baltimore is a major resource for marine and aquatic science in the mid-Atlantic region. Its live and interactive exhibits along with its on-site and outreach programs focus on creating an attitude of respect for the environment and the ecological balance of life.

The Summer Camp will offer instruction in marine and aquatic science, hands-on projects and information on career strategies. Additionally, the program is designed to encourage the Junior Aquarists to continue their interest and involvement in the sciences beyond the four weeks of Summer Science Camp.

As Junior Aquarists, participants are immersed in an environment unseen by general Aquarium visitors -- the day to day routines involved with maintaining a world-class institution. They go behind-the-scenes and interact with professionals in the field. Students gain hands-on experience working alongside the individuals who have chosen to pursue careers as aquarists, mammalogists, herpetologists and aviculturists. Students acquire an understanding of the secondary and undergraduate educational requirements needed to pursue various fields of study and how "book learning" is applied to the real world. Finally, Junior Aquarists "do science" by designing, carrying out and presenting to their families and friends, research projects using the National Aquarium in Baltimore's renowned collection of poison arrow frogs.

The program provides the foundation for a lifelong interest in science and research as well as an extended relationship with the Aquarium. Following participation in the NSF-funded Summer Science Camp program, students can continue to meet on a monthly basis as part of an ongoing Junior Aquarist Club. Further, completion of the Junior Aquarist program can be followed by participation in the High School Internship Program and ultimately the High School Student Guide program. The latter carries high school students through the Aquarium's rigorous seven-week volunteer training program, provides paying summer jobs and culminates in certification as full-fledged volunteer exhibit guides. While still in middle and high school, students can apply to the Henry Hall Scholarship Fund for additional marine science opportunities. Should students attend college, they are also eligible to participate in the Aquarium's College Internship Program. Therefore, the Junior Aquarist Summer Science Camp is not a four-week, one-shot experience. Rather, it is both the beginning of a potentially longlasting fascination with marine and aquatic science, and possibly the catalyst that produces a future scientist.

SSC-9353214
Bank Street College
New York, NY
Hogan, Kathlen and David Penberg

"Liberty Environmental Science Academy (LESA)

The Liberty Environmental Science Academy (LESA) will serve 40 African American and Latino rising seventh, eighth and ninth graders from Community School District Three in Manhattan, which includes Central Harlem. All are part of Bank Street's Liberty partnership program, a New York State-funded comprehensive

college preparatory program that stresses prevention through early intervention.

LESA's residential, 20-day, intensive summer science experience will take place at Bard College. Developed and coordinated by the Bronx Botanical Garden's Institute of Ecological Studies (IES), field investigation will alternate yearly between a terrestrial and an aquatic ecology focus. Outdoor Biological Instructional Strategies (OBIS) investigations will familiarize students with organisms and their environments with activities centered on the physical environment, aquatic environments, and organisms, plants, insects, and other invertebrates, birds, and mammals. Mathematics will be continually integrated into activities. Students will attend "Writing to Learn Mathematics and Science," and receive career counseling.

During the school year, weekly Saturday Environmental Science Clusters at Bank Street will involve LESA students in accessing Learning Link, a national electronic network; using the Center for Children and Technology's NSF-sponsored Imagine, a computer-based environment; and participating in Wave Hill's natural area restoration project.

SSC-9353241
San Diego State Univ. Fndt.
San Diego, CA
Park, Cynthia D.

"Summer Science and Technology to Advance Research Skills (SSTARS)

The Math/Science Regional Center at San Diego State University conducts a three-year Summer Science and Technology experience to Advance Research Skills (SSTARS) for 50 students entering 9th grade. The San Diego County schools which are located in the South Bay and Skyline areas include representation from each of the predominant underrepresented ethnic/racial groups in those areas.

The project consists of two closely related parts: a four-week summer residential program on the San Diego State University campus and an academic year follow-up for selected students. The summer session offers entering 9th graders an experimental pre-geometry class and a geometry computer lab, as well as an interdisciplinary earth science course which integrates a workshops in career exploration and adolescent problems. A technical writing class using Hypercard allows students to document their findings in innovative and expressive ways.

All students participate in a research project, as well as environmental field trips which supplement the courses. This includes a mentoring program in which university science faculty will work up to four hours weekly with small groups of students.

Each succeeding project year will be a recapitulation of the first project year. Students graduating from SSTARS will be able to continue summer science study at any one of 15 specialized Upward Bound Math/Science Centers.

SSC-9353244
Rensselaer Polytechnic Inst.
Troy, NY
Smith, Mark

"Rensselaer Summer Science Enrichment Project"

Rensselaer Polytechnic Institute will conduct a five-week residential Summer Science Enrichment Program for fifty entering 7th, 8th and 9th grade minority students per year. The principal objective is to design the summer experience to use cognitive apprenticeship and project team approaches to facilitate learning and problem solving skills. The summer program will model science and engineering processes using a project-oriented, problem solving instructional format. Participants will be selected from target schools in Albany, Schenectady and Troy City School Districts, New york State. Participants will form ten 5-member teams, each team working on a project to be completed at the conclusion of the summer. Coursework will consist of a technology lab, chemistry lab and research skills. Supplemental activities will consist of career exploration in the sciences, engineering and health professions, field trips to local industry and

science museums, recreational activities, team competitions, and a mentoring component using Rensselaer faculty and professional scientists and engineers. Instructional staff will be selected from local schools and residential teaching assistants will be selected from Rensselaer undergraduate/graduate students. Participants will enroll in Rensselaer's academic year precollege programs to continue the efforts begun during the summer. The planned outcome from participation in the Summer Science Enrichment Program is to prepare participants to pursue high school coursework that will equip them with the kinds of skills and knowledge leading to postsecondary education and careers in the sciences, engineering and health professions.

SSC-9353251
Rutgers University Busch Campus
New Brunswick, NJ
Iozzi, Louis, Daulat Husain and Patricia Johnson

"Science Summer Camp - (CAMP PROMISE)

This camp will act as a feeder to the college bound programs as well as initiate a consolidated and coordinated effort to effect minority participation in science and science education.

The goals set by this project are to significantly increase the participation and commitment of minority students in the sciences, and to heighten the level of awareness of students with potential careers in science and mathematics, including school teaching.

Forty eight minority students from underrepresented and disadvantaged groups, who have completed their 7th and 8th grades, will be eligible to attend the camp. Recruitment will be from the state of New Jersey, based on "need" and interest in the field of science, mathematics and engineering.

The summer session of Camp PROMISE will be the key component, and consist of three inter-related components: a) an enrichment apprenticeship component, where students will be assigned as apprentices to faculty/scientists for a week at a time; b) a remedial academic component which will offer classes in mathematics and English) a cultural resident component where participants will room and board on campus during the week. The program will operate weekdays only. An academic year component is included.

Portfolio assessment of students' progress using lab books, and other daily lesson plan data will be primarily anecdotal and qualitative. However, evaluation will also include quantative assessment of student achievement.

A broad range of participatory activities, not experienced in school classrooms, will help bring the "wonder" of science and encourage students to select science courses at high school. The ultimate aim is to influence minority students to make academic preparations in middle and high school so as to be able to make career choices in the are of science, engineering and mathematics.

SSC-9353255
Anchorage School District
Anchorage, AK
Lamebull, Edna and Jim Bailey

"Ellamek Elicarag (Yupik) "Learning About Our World"

The five week "Ellamek Elicaraq" Summer Science Camp is designed to provide exciting, career-oriented, and culturally relevant science and math experiences for fifty Alaska Native American middle school age students-experiences grounded in real-world hands-on exploration. The program's purpose is to provide the participants with basic tools to choose to take science and math courses, stay with their studies, achieve in their studies, and graduate to further science studies or careers.

The science disciplines will be integrated with applied math concepts and with activities requiring writing, speaking, reading, and computer work. All three years will include exploration of science, engineering and careers in petroleum-based industries. Major areas of study will be biology in 1994, (including marine biology, microbiology, botany, forestry,

animal studies, and ornithology), physics and technology in 1995, (including forces, weather, and aerospace), and geology and minerals extraction in 1996 (including geology, geophysics, and chemistry).

Although Anchorage-area exploration will be at the core of the program, out of town site field work will take campers to major sites of marine activity, forestry, fisheries, oil refining, rocketry, and mining over the three-year period. Professional scientists and engineers, University of Alaska Anchorage research scientists, university students, high school students, tribal tradition bearers and role models, and veteran summer science campers will serve as mentors and co-learners. And because Native cultures are grounded in tradition, archeological sites, subsistence experiences, and the knowledge of elders will be interwoven into each summer. Cultural heritage will play a major role in building self esteem and linking tradition with the science,m engineering, and math careers of tomorrow.

Methods applied in the camp will be contextual, i.e., they will be practiced and applied in the field. lab, and workplaces most central to the future of the participants. As students see, construct, and understand the connections between their own lives and careers in science, they will begin to believe that such careers are within their reach. They will construct goals and plans to achieve such careers.

SSC-9353256
South Dakota School of Mines and Technology
Rapid City, SD
McCulloh, Sara and J. A. Weyland

"Skill Summer Science Camp for American Indian Students"

The Skill Summer Science Camp Project of the South Dakota School of Mines and Technology will be a 4-week residential math/science program for American Indian students. Fifty American Indian students per summer will be selected from South Dakota's nine Indian reservations to participate each summer.

The goals of the Skill Summer Science Camp are to provide a foundation for a lifelong interest in science and mathematics for all participants and to encourage the consideration of SEM as possible career choices. Students entering eighth grade will be selected based on their application and teacher's recommendation/commitment to assist with a Science Fair project.

The curriculum uses a hands-on discovery approach, collaborative learning work groups and interdisciplinary curriculum. The disciplinary focus is on "Mathematical Problem Solving in Physics" and includes the following activities: 1) Basic Skills: Mathematical Problem Solving in Physics; Computer Labs; Communications; Math Applications; 2) Research: Science Fair Project Development; and 3) Careers: Robotics; Career Semimars; Geology/Paleontology.

In order to provide intensive role model/mentor experiences, the program staff/faculty includes over 19 SDSM&T faculty and AISES students, and tribal school/college faculty to work with the SSC students.

Evening programs will include astronomy, Project Wild (environmental activities from the Game, Fish and Parks Dept.), field trips and cultural activities. Parents will be invited to participate in the Family Math programs each week as well as the geology field trip, science fair and graduation.

School year follow-up will include: bi-monthly newsletters, invitations to Saturday seminars, and a Skill SSC Alumni Reunion during the High plains Regional Science Fair.

SSC-9353260
University of North Carolina at Wilmington
Wilmington, NC
Kishton, Joseph M.

"Cape Fear Summer Science Camp"

Cape Fear Summer Camp is a four-week summer program combined with academic year follow-up activities aimed at increasing minority representation in

the areas of science, engineering and mathematics. Objectives of the program include providing students with hands-on experience developing the process skills of observation, measurement and analysis. Successive groups of fifty minority students will be taught by experienced public school science and mathematic instructors. Classroom and laboratory instruction will be integrated with field exercises with a coastal science emphasis. Some of the accomplished graduates from each group will serve as peer mentors for subsequent students and will also participate in focused career exploration activities including involvement in mentoring relationships with professionals working in science, technology and engineering occupations.

SSC-9353277
University of Toledo
Toledo, OH
Cooks, Helen, Lauremce Collins, Sharon McDonald and Anthula Natsoulas

"The University of Toledo-PREP/TECH Program"

A 5-week Prep/Tech Summer Institute Summer Science Camp (SSC) and Academic Year Program will be held at The University of Toledo and is designed to: 1) afford fifty (50) 7-9 grade African and Hispanic-American students academic enrichment opportunities in mathematics, science, and language arts; 2) challenge and develop critical thinking abilities through daily classroom exercises and laboratory projects which employ a hands-on approach to problem solving; 3) expose students to the laboratory environment through experiments that are designed to increase their awareness and understanding of scientific and technical methodologies; 4) familiarize students with computer usage; 5) provide stipends for students whose socio-economic circumstances reflect a need for economic assistance to encourage full participation in the Prep/Tech program; 6) assist selected students in their 9th grade transitional year with science and math studies though an Extended Prep/Tech curriculum; 7) provide follow-up academic year activities; 8) expose students to research methods using resources provided by The University of Toledo's Carlson Library, faculty, students, and campus, as well as community role models and parents. Members of civic and community organizations will also serve as role models, mentors and guest lecturers.

SSC-9353279
Kennesaw State College
Marietta, GA
Lester, Army

"Summer Science Camp For Precollege Minorities in Science and Engineering"

This project will offer a four-week college/community operated summer science camp that will foster the efforts of Kennesaw State College, local school systems and community organizations to: (1) help break the negative stigma of SEM related subjects; (2) help students develop the skills and motivate them to do well in these courses; and (3) to provide targeted students with information on career opportunities in SEM. Underrepresented minority 7th -9th grade students from suburban Atlanta (Cobb County and Marietta City School Systems) will take part in this program. Project staff and several volunteers will coordinate activities that include lectures and seminars, guest speakers, laboratory studies, group research projects, career exploration, academic enrichment and field trips. Course work will cover a range of SEM related courses, with an emphasis on the application of those fields. Following the summer science camps, tutoring and mentoring will continue throughout the academic year. The effectiveness of this program will be determined by the students' attitudes and behaviors toward science, success of the participants in science classes and science fairs, and major/career selection in college.

SSC-9353281
East Bay Consortium of Educ.
Oakland, CA
Jaquez, Dolores and Victor Gee

"Pre-Collegiate Community Laboratory"

This summer science camp, to be operated by the East Bay Consortium of Education Institutions, Inc., an interagency collaboration of 19 Oakland-area schools, colleges, and universities, will serve 50 Black and Hispanic seventh- and eighth-graders who attend seven schools in a severely educationally and economically disadvantaged area of Southeast Oakland (CA). The project site will be Merritt College (Peralta Colleges). Learning experiences will be offered for five weeks per summer, with 12 Saturday follow-up activities scheduled during the following academic year.

Classroom instruction will follow an integrated, multidisciplinary, thematically organized model. Themes have been chosen which highlight applications of science and mathematics to events, issues, and past-times of interest to the young target population. These include the Loma Prieta earthquake and the accompanying collapse of the Nimitz Freeway, the recent Berkeley fire, issues related to pollution, development, and economic potential of San Francisco Bay; the physics of sports movement; and implications of mathematics for strong and durable construction.

Each class section of 25 students will be under the care of an instructional team composed of fully credentialed teachers (qualified in both mathematics and science), an upper division mathematics or science major planning to teach in the public schools, and an older high school peer mentor/role model. The instructional team will themselves model appropriate individual responsibility and cooperative problem solving.

Instruction will follow accepted research practice. Participants will first observe phenomena and gather data. They will then analyze this information in an effort to form explanatory/ predictive hypotheses. After testing their assumptions, they will fine-tune their hypotheses and share their findings with others.

Classroom activities will be supplemented by field study/research throughout the greater Oakland area. A culminating event of each summer session will be a two and one-half day ecological camping expedition at Pinnacles National Monument, jointly sponsored by Naturalists at Large, who will provide onsite explanations and guidance. Additional field experiences will be offered in academic-year follow-up sessions.

SSC-9353287
New Mexico Museum of Natural History
Albuquerque, NM
Matthew, Kathryn and Susan McGuire

"Minority Family Workshop: Water Ecology Project"

The New Mexico Museum of Natural History and Science seeks to improve the science literacy of Native American middle school students through an expansion of its successful **Water Ecology Project.** This program takes Native American youngsters and exposes them to hands-on activities to give them a more realistic understanding of science careers. To carry out this project, partnerships have been formed between the Museum, governmental agencies and educational institutions. These partnerships have been designed to provide middle school students with a broad exposure to science-based careers in New Mexico. Using water quality monitoring as a theme unifies all of the student activities associated with this project. Water quality, water conservation, and the ecology of riparian areas are of great concern to the arid southwestern U.S. This theme has been chosen to facilitate the involvement of whole families and rural communities in the program. The community and family support produced through the choice of this theme is intended to reinforce the shifts in student attitudes toward science. Thus, this project is well-suited for Native American students whose sense of self is often strongly influenced by family.