Appendices

Appendix A
AMS Task Force on Excellence

MEMBERS

Morton Lowengrub, Chair of the Task Force
Dean of the College of Arts and Sciences, Indiana University
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Donald E. McClure
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AMS STAFF

Raquel E. Storti
Assistant to the Executive Director, American Mathematical Society

Chronology of the Task Force on Excellence

1992	AMS ad hoc Committee on Resource Needs for Excellence in Mathematics Instruction appointed by AMS President Michael Artin, chaired by Professor Felix Haas.
Jan 1992	Committee meets in San Antonio.
1993	Dr. Morton Lowengrub, Dean of Arts and Sciences, Indiana University assumes the chair of the Committee. The name of the Committee is changed to AMS Task Force on Excellence in Mathematics Scholarship: Assuring Quality Undergraduate and Graduate Programs at Doctoral-Granting Institutions.
May 1993	Committee meets in Chicago, IL.
Mar 1994	Task Force meets in Chicago, IL.
Aug 1994	Task Force meets in Minneapolis, MN.
	Focus Discussion I.
Oct 1994	Focus Discussion II, Washington, DC.
Jan 1995	Task Force meets in San Francisco, CA.
	Focus Discussion III, IV.
Mar 1995	Focus Discussion V, Chicago, IL.
Aug 1995	Task Force meets in Burlington, VT.
	Focus Discussion VI, VII.
Oct 1995	Focus Discussion VIII, Washington, DC.
Jan 1996	Focus Discussion IX, X, Orlando, FL.
Mar 1996	Deans Focus Discussion I, Laguna Beach, CA.
Apr 1996	Task Force meets in New York, NY.
May 1996	Deans Focus Discussion II, Chicago, IL.
Aug 1996	Focus Discussion XI, Seattle, WA.
Sep 1996	Site Visit—Oklahoma State University, Stillwater, OK.
	Site Visit—University of Michigan, Ann Arbor, MI.
Oct 1996	Site Visit—University of Chicago, Chicago, IL.
Nov 1996	Deans Focus Discussion III, Philadelphia, PA.
Dec 1996	Site Visit—University of Texas at Austin, TX.
Jan 1997	Task Force meets in San Diego, CA.
Feb 1997	Site Visit—University of Arizona, Tucson, AZ.
Apr 1997	Task Force meets in Bloomington, IN.
Oct 1998	Task Force meets in Chicago, IL.
Aug 1999	Leadership Conference, Bloomington, IN.

Appendix B
Groupings of Departments: AMS-IMS-MAA Annual Survey

(Found at http://www.ams.org/employment/groups_des.html)

The reports of the AMS-IMS-MAA Annual Survey present data for departments divided into groups according to several characteristics, the principal one being the highest degree offered in the mathematical sciences. Doctoral-granting departments of mathematics are further subgrouped according to their ranking by "scholarly quality of program faculty", as reported in the 1995 publication *Research-Doctorate Programs in the United States: Continuity and Change*.[1] These rankings update those reported previously in a study published in 1982.[2] Consequently, the departments that now (in 1996) comprise Groups I, II, and III differ from those used in prior surveys. These groupings are used for statistical reporting purposes only and may not accurately reflect current program quality at individual departments.

The subdivision of the Group I institutions into Group I Public and Group I Private is new with the 1996 Annual Survey. With the increase in the size of the Group I departments from 39 to 48, the AMS-IMS-MAA Data Committee judged that a further subdivision along the lines of public and private would provide more meaningful reporting of the data for these departments.

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[1] *Research-Doctorate Programs in the United States: Continuity and Change*, edited by Marvin L. Goldberger, Brendan A. Maher, and Pamela Ebert Flattau; National Academy Press, Washington, D.C., 1995.

[2] *An Assessment of Research-Doctorate Programs in the United States*: *Mathematical and Physical Sciences*, edited by Lyle V. Jones, Gardner Lindzey, and Porter E. Coggeshall; National Academy Press, Washington, D.C., 1982. The information on mathematics, statistics, and computer science was presented in digest form in the April 1983 issue of the *Notices*, pages 257–267, and an analysis of the classifications was given in the June 1983 *Notices*, pages 392–393.

Brief descriptions of all the groupings are as follows:

- **Group I** is composed of 48 departments with scores in the 3.00–5.00 range.
- **Group I Public** and **Group I Private** are Group I departments at public institutions and private institutions, respectively.
- **Group II** is composed of 56 departments with scores in the 2.00–2.99 range.
- **Group III** contains the remaining U.S. departments reporting a doctoral program, including a number of departments not included in the 1995 ranking of program faculty.
- **Group IV** contains U.S. departments (or programs) of statistics, biostatistics, and biometrics reporting a doctoral program.
- **Group V** contains U.S. departments (or programs) in applied mathematics/applied science, operations research, and management science which report a doctoral program.
- **Group Va** is applied mathematics/applied science; **Group Vb** is operations research and management science.
- **Group M** contains U.S. departments granting a master's degree as the highest graduate degree.
- **Group B** contains U.S. departments granting a baccalaureate degree only.

Group I Public

(Scores 3.00–5.00; 25 departments)

City University of New York, Graduate Center
Georgia Institute of Technology
Indiana University, Bloomington
Michigan State University
Ohio State University
Pennsylvania State University
Purdue University
Rutgers University, New Brunswick
State University of New York, Stony Brook
University of California, Berkeley
University of California, Los Angeles
University of California, San Diego
University of California, Santa Barbara
University of Illinois, Chicago
University of Illinois, Urbana-Champaign
University of Maryland, College Park
University of Michigan, Ann Arbor
University of Minnesota, Minneapolis
University of North Carolina, Chapel Hill
University of Oregon
University of Texas, Austin
University of Utah
University of Virginia
University of Washington
University of Wisconsin, Madison

Group I Private

(Scores 3.00–5.00: 23 departments)

Boston University
Brandeis University
Brown University
California Institute of Technology
Carnegie Mellon University
Columbia University
Cornell University
Duke University
Harvard University
Johns Hopkins University
Massachusetts Institute of Technology
New York University, Courant Institute

Northwestern University
Princeton University
Rensselaer Polytechic Institute
Rice University
Stanford University
University of Chicago
University of Notre Dame
University of Pennsylvania
University of Southern California
Washington University
Yale University

Group II

(Scores 2.00–2.99: 56 departments)

Arizona State University
Auburn University
Case Western Reserve University
Claremont Graduate University
Clemson University
Colorado State University
Dartmouth College
Florida State University
Iowa State University
Kansas State University
Kent State University
Lehigh University
Louisiana State University, Baton Rouge
North Carolina State University, Raleigh
Northeastern University
Oregon State University
Polytechnic University
State University of New York, Albany
State University of New York, Binghamton
State University of New York, Buffalo
Syracuse University
Temple University
Texas A&M University
Texas Tech University
Tulane University
University of Arizona
University of California, Davis
University of California, Irvine
University of California, Riverside
University of California, Santa Cruz
University of Cincinnati

University of Colorado, Boulder
University of Connecticut
University of Delaware
University of Florida
University of Georgia
University of Hawaii
University of Houston
University of Iowa
University of Kentucky
University of Massachusetts, Amherst
University of Miami
University of Missouri, Columbia
University of Nebraska, Lincoln
University of North Texas
University of Oklahoma
University of Pittsburgh
University of Rochester
University of South Carolina
University of Tennessee
University of Texas, Arlington
Vanderbilt University
Virginia Polytechnic Institute & State University
Washington State University
Wayne State University
Wesleyan University

Group III

(Scores below 2.00: 29 departments)

Adelphi University
Bowling Green State University
Clarkson University
Colorado School of Mines
Drexel University
George Washington University
Howard University
Idaho State University
Illinois State University
New Mexico State University
Northern Illinois University
Ohio University
Old Dominion University
Southern Illinois University, Carbondale
Southern Methodist University
St. Louis University
Stevens Institute of Technology

University of Alabama, Huntsville
University of Alabama, Tuscaloosa
University of Maryland, Baltimore
University of Mississippi
University of Missouri, Rolla
University of Rhode Island
University of South Florida
University of Southwestern Louisiana
University of Texas, Dallas
University of Wisconsin, Milwaukee
University of Wyoming
Western Michigan University

(Not included in the 1995 NRC study: 43 departments)

Air Force Institute of Technology
American University
Brigham Young University
Bryn Mawr College
Catholic University of America
Central Michigan University
Clark University
College of William & Mary
Emory University
Florida Atlantic University
Indiana University-Purdue University
Marquette University
Michigan Technological University
Mississippi State University
Montana State University
Naval Postgraduate School
New Jersey Institute of Technology
North Dakota State University
Oklahoma State University
Portland State University
Rutgers University, Newark
Tufts University
University of Alabama, Birmingham
University of Alaska, Fairbanks
University of Arkansas
University of Central Florida
University of Colorado, Denver
University of Denver
University of Idaho
University of Kansas *
University of Memphis

University of Missouri, Kansas City
University of Montana
University of New Hampshire
University of New Mexico *
University of North Carolina, Charlotte
University of Northern Colorado
University of Toledo
University of Vermont
Utah State University
West Virginia University
Wichita State University
Worcester Polytechnic Institute

* These departments were formerly in Group II based on the 1982 NRC rankings.

Group IV

(Statistics, biostatistics, and biometrics: 81 departments)

Auburn University, Discrete & Statistical Sciences
Carnegie Mellon University, Statistics
Case Western Reserve University, Statistics
Case Western Reserve University, Epidemiology & Biostatistics
Colorado State University, Statistics
Columbia University, Statistics
Columbia University, Biostatistics
Cornell University, Statistics
Cornell University, Biometrics
Cornell University, Social Statistics
Duke University, Statistics & Decision Sciences
Emory University, Biostatistics
Florida State University, Statistics
George Mason University, Applied & Engineering Statistics
George Washington University, Statistics
Harvard University, Statistics
Harvard University, Biostatistics
Iowa State University, Statistics
Johns Hopkins University, Biostatistics
Kansas State University, Statistics
Massachusetts Institute of Technology, Statistics
Medical University of South Carolina, Biometry & Epidemiology
Michigan State University, Statistics & Probability
New York University, Statistics & Operations Research
North Carolina State University, Raleigh, Statistics
North Dakota State University, Statistics
Northwestern University, Statistics
Ohio State University, Statistics

Oklahoma State University, Statistics
Oregon State University, Statistics
Pennsylvania State University, Statistics
Purdue University, Statistics
Rice University, Statistics
Rutgers University, New Brunswick, Statistics
Southern Methodist University, Statistical Science
Stanford University, Statistics
State University of New York, Albany, Statistics & Biometry
State University of New York, Buffalo, Statistics
Temple University, Statistics
Texas A&M University, Statistics
University of Alabama, Birmingham, Biostatistics
University of Alabama, Tuscaloosa, Applied Statistics
University of California, Berkeley, Statistics
University of California, Berkeley, Biostatistics
University of California, Davis, Statistics
University of California, Los Angeles, Biostatistics
University of California, Riverside, Statistics
University of California, Santa Barbara, Statistics & Applied Probability
University of Chicago, Statistics
University of Cincinnati, Epidemiology & Biostatistics, Medical College
University of Connecticut, Statistics
University of Florida, Statistics
University of Georgia, Statistics
University of Hawaii, Public Health Sciences
University of Illinois, Urbana-Champaign, Statistics
University of Iowa, Statistics & Actuarial Science
University of Kentucky, Statistics
University of Maryland, College Park, Measure Statistics
University of Michigan, Ann Arbor, Statistics
University of Michigan, Ann Arbor, Biostatistics
University of Minnesota, Minneapolis, Statistics
University of Minnesota, Minneapolis, Biostatistics
University of Missouri, Columbia, Statistics
University of North Carolina, Chapel Hill, Statistics
University of North Carolina, Chapel Hill, Biostatistics
University of Oklahoma, Biostatistics & Epidemiology
University of Pennsylvania, Statistics
University of Pittsburgh, Statistics
University of Pittsburgh, Biostatistics
University of Rochester, Statistics
University of South Carolina, Statistics
University of Virginia, Statistics
University of Washington, Statistics
University of Washington, Biostatistics

University of Wisconsin, Madison, Statistics
University of Wyoming, Statistics
Virginia Commonwealth University, Biostatistics
Virginia Polytechnic Institute & State University, Statistics
West Virginia University, Statistics & Computer Science
Yale University, Statistics
Yale University, Biostatistics

Group Va

(Applied mathematics/ applied science: 18 departments)

Brown University, Applied Mathematics
California Institute of Technology, Applied Mathematics
Cornell University, Applied Mathematics
Florida Institute of Technology, Applied Mathematics
Harvard University, Engineering & Applied Sciences
Johns Hopkins University, Mathematical Sciences
Northwestern University, Engineering Science & Applied Mathematics
Princeton University, Applied & Computational Mathematics
Rice University, Computational & Applied Mathematics
State University of New York, Stony Brook, Applied Mathematics & Statistics
University of Arizona, Applied Mathematics
University of Colorado, Boulder, Applied Mathematics
University of Iowa, Applied Mathematical & Computational Sciences
University of Louisville, Engineering Mathematics & Computer Science
University of Texas, Austin, Computational & Applied Mathematics
University of Virginia, Applied Mathematics & Mechanics
University of Washington, Applied Mathematics
Washington University, Systems Science & Mathematics

Group Vb

(Operations research and management science: 31 departments)

Case Western Reserve University, Operations Research
Cornell University, Operations Research & Industrial Engineering
George Mason University, Operations Research & Engineering
George Washington University, Operations Research
Georgia Institute of Technology, Industrial & Systems Engineering
Massachusetts Institute of Technology, Operations Research
Massachusetts Institute of Technology, Management Science
Naval Postgraduate School, Operations Research
North Carolina State University, Raleigh, Operations Research
Northwestern University, Managerial Economics & Decision Science
Northwestern University, Industrial Engineering & Management Science
Purdue University, Industrial Engineering

Rensselaer Polytechic Institute, Decision Science & Engineering Systems
Rutgers University, New Brunswick, Operations Research
Stanford University, Engineering-Economic Systems & Operations Research
State University of New York, Buffalo, Industrial Engineering
Syracuse University, Industrial Engineering & Operations Research
Union College, Administrative & Engineering Systems
University of Alabama, Tuscaloosa, Management Science & Statistics
University of California, Berkeley, Industrial Engineering & Op Research
University of Chicago, Graduate School of Business
University of Cincinnati, Quantitative Analysis & Operations Management
University of Florida, Industrial & Systems Engineering
University of Miami, Management Science
University of Michigan, Ann Arbor, Industrial & Operations Engineering
University of Minnesota, Minneapolis, Management Science
University of North Carolina, Chapel Hill, Operations Research
University of Pittsburgh, Industrial Engineering
University of Tennessee, Management Science
University of Wisconsin, Madison, Industrial Engineering
Virginia Polytechnic Institute & State University, Indus & Systems Engineering

Appendix C
The Carnegie Foundation Classification of Higher Education –

(Found at http://www.carnegiefoundation.org/cihe/)

Foreword (excerpts)

Ernest L . Boyer

The Carnegie Classification of higher education groups American colleges and universities according to their missions. This classification was developed by Clark Kerr in 1970 primarily to improve the precision of the Carnegie Commission's research. Over the years, the system has gained credibility and served as a helpful guide for scholars and researchers.

The Carnegie Classification is not intended to establish a hierarchy among higher learning institutions. Rather, the aim is to cluster institutions with similar programs and purposes, and we oppose the use of the classification as a way of making qualitative distinctions among the separate sectors. We have, in this country, a rich array of institutions serving a variety of needs, and there are institutions of distinction in every category of the Carnegie Classification.

Over the years, we have modified the definitions somewhat to improve the groupings in this new edition, the most consequential change we've made is to classify all institutions, for the first time, according to the highest level of degree conferred—from associate of arts to doctoral degrees. This means that the "Liberal Arts" category—which will now be called "Baccalaureate"—includes all colleges where the baccalaureate is the highest degree awarded. The "Comprehensive" category—which will now be called "Master's (Comprehensive)" includes master's–granting institutions. We're convinced that classifying campuses on the basis of degree level brings still more clarity and objectivity to the process.

Looking for larger patterns we are once again impressed that with all the talk about cutbacks and retrenchment over 400 new institutions appear in this edition —the majority being two-year institutions listed in the Associate of Arts category. Approximately 100 of the new colleges are specialized institutions. This growth is counterbalanced by over 200 institutions that merged, closed, or otherwise are no longer eligible for inclusion in this listing. The overall number of

institutions in the 1994 Carnegie Classification increased from 3,389 to 3,595. The new Carnegie Classification also reveals what some have called the "upward drift" in higher education, and of special interest is the continuing expansion of research and doctoral institutions. America must continue to support a core of world-class research centers; they are essential to the advancement of knowledge and to human achievement. Such activity is costly, however, and it is crucial that we have available the fiscal resources needed to sustain an expanding network of institutions devoted to scholarly research.

We also note, with satisfaction that the balance between the private and public sector has, since 1987 remained relatively constant and, in spite of earlier trends and dark predictions, the independent colleges in America have shown resiliency and growth. We urge that public policy continue to acknowledge the contributions of both sectors.

…

In summary, the 1994 Carnegie Classification reveals a healthy and expanding network of higher learning institutions in the nation. Voices of gloom and predictions of decline are not supported by the trends. Americans, perhaps as never before need a vibrant system of higher education one that is closely tied to the economic and social vitality of the nation and to the private hopes of students and their families

Colleges and universities in the United States have an amazing capacity to respond creatively to new conditions. This system, accomplished without a "master plan" and federal directive remains one of America's most remarkable achievements.

DEFINITIONS OF CATEGORIES

The 1994 Carnegie Classification includes all colleges and universities in the United States that are degree-granting and accredited by an agency recognized by the U.S. Secretary of Education.

Research Universities I: These institutions offer a full range of baccalaureate programs, are committed to graduate education through the doctorate, and give high priority to research. They award 50 or more doctoral degrees[1] each year. In addition, they receive annually $40 million or more in federal support.[2]

Research Universities II: These institutions offer a full range of baccalaureate programs, are committed to graduate education through the doctorate, and give high priority to research. They award 50 or more doctoral degrees[1] each year. In addition, they receive annually between $15.5 million and $40 million in federal support.[2]

Doctoral Universities I: These institutions offer a full range of baccalaureate programs and are committed to graduate education through the doctorate. They award at least 40 doctoral degrees[1] annually in five or more disciplines.[3]

Doctoral Universities II: These institutions offer a full range of baccalaureate programs and are committed to graduate education through the doctorate. They award annually at least ten doctoral degrees in three or more disciplines, or 20 or more doctoral degrees in one or more disciplines.[3]

Master's (Comprehensive) Universities and Colleges I: These institutions offer a full range of baccalaureate programs and are committed to graduate education through the master's degree. They award 40 or more master's degrees annually in three or more disciplines.[3]

Master's (Comprehensive) Universities and Colleges II: These institutions offer a full range of baccalaureate programs and are committed to graduate education through the master's degree. They award 20 or more master's degrees annually in one or more disciplines.[3]

Baccalaureate (Liberal Arts) Colleges I: These institutions are primarily undergraduate colleges with major emphasis on baccalaureate-degree programs. They award 40 percent or more of their baccalaureate degrees in liberal arts fields[4] and are restrictive in admissions.

Baccalaureate Colleges II: These institutions are primarily undergraduate colleges with major emphasis on baccalaureate-degree programs. They award less than 40 percent of their baccalaureate degrees in liberal arts fields[4] or are less restrictive in admissions.

Associate of Arts Colleges: These institutions offer associate of arts certificate or degree programs and, with few exceptions, offer no baccalaureate degrees.[5]

Specialized Institutions: These institutions offer degrees ranging from the bachelor's to the doctorate. At least 50 percent of the degrees awarded by these institutions are in a single discipline. Specialized institutions include: theological seminaries, bible colleges, medical schools, schools of engineering and technology, schools of business and management, schools of art and design, schools of

music, schools of law, teachers' colleges, graduate centers, maritime academies, military institutes, and tribal colleges.

Notes on Definitions

[1]Doctoral degrees include Doctor of Education, Doctor of Juridical Science, Doctor of Public Health, and the Ph.D. in any field.

[2]Total federal obligation figures are available from the National Science Foundation's annual report called "Federal Support to Universities, Colleges, and Nonprofit Institutions". The years used in averaging total federal obligations are 1989, 1990, and 1991.

[3]Distinct disciplines are determined by the U.S. Department of Education's Classification of Instructional Programs' 4-digit series.

[4]The liberal arts disciplines include English language and literature, foreign languages, letters, liberal and general studies, life sciences, mathematics, philosophy and religion, physical sciences, psychology, social sciences, the visual and performing arts, area and ethnic studies, and multi- and interdisciplinary studies. The occupational and technical disciplines include agriculture, allied health, architecture, business and management, communications, conservation and natural resources, education, engineering, health sciences, home economics, law and legal studies, library and archival sciences, marketing and distribution, military sciences, protective services, public administration andservices, and theology.

[5]This group includes community, junior, and technical colleges.

Research and Doctoral Universities

Research Universities I (Public)

ALABAMA
University of Alabama at Birmingham
ARIZONA
Arizona State University
University of Arizona
CALIFORNIA
University of California at Berkeley
University of California at Davis
University of California at Irvine
University of California at Los Angeles
University of California at San Diego
University of California at San Francisco
University of California at Santa Barbara
COLORADO
Colorado State University
University of Colorado at Boulder
CONNECTICUT
University of Connecticut
FLORIDA
Florida State University
University of Florida
GEORGIA
Georgia Institute of Technology
University of Georgia
HAWAII
University of Hawaii at Manoa
ILLINOIS
University of Illinois at Chicago
University of Illinois at Champaign-Urbana
INDIANA
Indiana University at Bloomington
Purdue University, Main Campus
IOWA
Iowa State University
University of Iowa
KANSAS
University of Kansas, Main Campus
KENTUCKY
University of Kentucky
LOUISIANA
Louisiana State University and Agricultural and Mechanical College
MARYLAND
University of Maryland at College Park
MASSACHUSETTS
University of Massachusetts at Amherst
MICHIGAN
Michigan State University
University of Michigan at Ann Arbor
Wayne State University
MINNESOTA
University of Minnesota at Twin Cities
MISSOURI
University of Missouri at Columbia
NEBRASKA
University of Nebraska at Lincoln
NEW JERSEY
Rutgers, the State University of New Jersey, New Brunswick Campus
NEW MEXICO
New Mexico State University, Main Campus
University of New Mexico, Main Campus
NEW YORK
State University of New York at Buffalo
State University of New York at Stony Brook
NORTH CAROLINA
North Carolina State University
University of North Carolina at Chapel Hill
OHIO
Ohio State University, Main Campus, The
University of Cincinnati, Main Campus
OREGON
Oregon State University
PENNSYLVANIA
Pennsylvania State University, Main Campus
Temple University
University of Pittsburgh, Pittsburgh Campus
TENNESSEE
University of Tennessee at Knoxville
TEXAS
Texas A&M University
University of Texas at Austin
UTAH
University of Utah
Utah State University
VIRGINIA
University of Virginia
Virginia Commonwealth University
Virginia Polytechnic Institute and State University
WASHINGTON
University of Washington
WEST VIRGINIA
West Virginia University
WISCONSIN
University of Wisconsin at Madison

Research Universities I (Private)

CALIFORNIA
California Institute of Technology
Stanford University
University of Southern California
CONNECTICUT
Yale University
DISTRICT OF COLUMBIA
Georgetown University
Howard University
FLORIDA
University of Miami
GEORGIA
Emory University
ILLINOIS
Northwestern University
University of Chicago
MARYLAND
Johns Hopkins University
MASSACHUSETTS
Boston University
Harvard University
Massachusetts Institute of Technology
Tufts University
MISSOURI
Washington University
NEW JERSEY
Princeton University
NEW YORK
Columbia University in the City of New York
Cornell University
New York University
Rockefeller University
University of Rochester
Yeshiva University
NORTH CAROLINA
Duke University
OHIO
Case Western Reserve University
PENNSYLVANIA
Carnegie Mellon University
University of Pennsylvania
RHODE ISLAND
Brown University
TENNESSEE
Vanderbilt University

Research Universities II (Public)

ALABAMA
Auburn University
ARKANSAS
University of Arkansas, Main Campus
CALIFORNIA
University of California at Riverside
University of California at Santa Cruz
DELAWARE
University of Delaware
FLORIDA
University of South Florida
IDAHO
University of Idaho
ILLINOIS
Southern Illinois University at Carbondale
KANSAS
Kansas State University
MISSISSIPPI
Mississippi State University
University of Mississippi
NEW YORK
State University of New York at Albany
OHIO
Kent State University, Main Campus
Ohio University, Main Campus
OKLAHOMA
Oklahoma State University, Main Campus
University of Oklahoma, Norman Campus
OREGON
University of Oregon
RHODE ISLAND
University of Rhode Island
SOUTH CAROLINA
Clemson University
University of South Carolina at Columbia
TEXAS
Texas Tech University
University of Houston
VERMONT
University of Vermont
WASHINGTON
Washington State University
WISCONSIN
University of Wisconsin at Milwaukee
WYOMING
University of Wyoming

Research Universities II (Private)

DISTRICT OF COLUMBIA
George Washington University
INDIANA
University of Notre Dame
LOUISIANA
Tulane University
MASSACHUSETTS
Brandeis University
Northeastern University
MISSOURI
Saint Louis University
NEW YORK
Rensselaer Polytechnic Institute
Syracuse University, Main Campus
PENNSYLVANIA
Lehigh University
TEXAS
Rice University
UTAH
Brigham Young University

Doctoral Universities I (Public)

ALABAMA
University of Alabama, The
ARIZONA
Northern Arizona University
COLORADO
University of Northern Colorado
GEORGIA
Georgia State University
ILLINOIS
Illinois State University
Northern Illinois University
INDIANA
Ball State University
KENTUCKY
University of Louisville
MICHIGAN
Western Michigan University
MISSISSIPPI
University of Southern Mississippi
MISSOURI
University of Missouri at Kansas City
University of Missouri at Rolla
NEW YORK
City University of New York Graduate School and University Center
State University of New York at Binghamton
NORTH CAROLINA
University of North Carolina at Greensboro
OHIO
Bowling Green State University
Miami University
University of Akron, Main Campus
University of Toledo
PENNSYLVANIA
Indiana University of Pennsylvania
TENNESSEE
Memphis State University
TEXAS
East Texas State University
Texas Woman's University
University of North Texas
University of Texas at Arlington
University of Texas at Dallas
VIRGINIA
College of William and Mary
Old Dominion University

Doctoral Universities I (Private)

CALIFORNIA
Claremont Graduate School
United States International University
COLORADO
University of Denver
DISTRICT OF COLUMBIA
American University, The
Catholic University of America
FLORIDA
Florida Institute of Technology
Nova University
GEORGIA
Clark Atlanta University
ILLINOIS
Illinois Institute of Technology
Loyola University of Chicago
MASSACHUSETTS
Boston College
MICHIGAN
Andrews University
NEW YORK
Adelphi University
Fordham University

Hofstra University
New School for Social Research
Polytechnic University
Saint John's University
Teachers College, Columbia University
OHIO
Union Institute
PENNSYLVANIA
Drexel University
TEXAS
Southern Methodist University
WISCONSIN
Marquette University

Doctoral Universities II (Public)

ALABAMA
University of Alabama at Huntsville
ALASKA
University of Alaska at Fairbanks
CALIFORNIA
San Diego State University
COLORADO
Colorado School of Mines
University of Colorado at Denver
FLORIDA
Florida Atlantic University
Florida International University
University of Central Florida
IDAHO
Idaho State University
INDIANA
Indiana State University
Indiana University-Purdue University at Indianapolis
KANSAS
Wichita State University, The
LOUISIANA
Louisiana Tech University
University of New Orleans
University of Southwestern Louisiana
MAINE
University of Maine
MARYLAND
University of Maryland Baltimore County
MASSACHUSETTS
University of Massachusetts at Lowell
MICHIGAN
Michigan Technological University
MISSOURI
University of Missouri at Saint Louis
MONTANA
Montana State University
University of Montana, The
NEVADA
University of Nevada, Reno
NEW HAMPSHIRE
University of New Hampshire
NEW JERSEY
New Jersey Institute of Technology
Rutgers, The State University of New Jersey, Newark Campus
NEW YORK
State University of New York College of Environmental Science and Forestry
NORTH DAKOTA
North Dakota State University, Main Campus
University of North Dakota, Main Campus
OHIO
Cleveland State University
Wright State University, Main Campus
OREGON
Portland State University
SOUTH DAKOTA
University of South Dakota
TENNESSEE
Middle Tennessee State University
Tennessee State University
TEXAS
Texas Southern University
VIRGINIA
George Mason University
PUERTO RICO
University of Puerto Rico, Rio Piedras Campus

Doctoral Universities II (Private)

CALIFORNIA
Biola University
Loma Linda University
Pepperdine University
University of LaVerne
University of San Diego
University of San Francisco
University of the Pacific
ILLINOIS
De Paul University
MASSACHUSETTS
Clark University
Worcester Polytechnic Institute
MICHIGAN
University of Detroit, Mercy
NEW HAMPSHIRE
Dartmouth College

NEW JERSEY
Seton Hall University
Stevens Institute of Technology
NEW YORK
Clarkson University
Pace University
NORTH CAROLINA
Wake Forest University
OKLAHOMA
University of Tulsa
PENNSYLVANIA
Duquesne University
Hahnemann University
TEXAS
Baylor University
Texas Christian University

Appendix D
National Science Foundation Programs

A comprehensive and up-to-date list of NSF programs can be found at:
http://www.nsf.gov/home/programs/start.htm.
Excerpts from the NSF Web site are included below to illustrate the kinds of information available about specific divisions or programs. Navigating the Web site also provides an overall view of the structure of the National Science Foundation—helpful knowledge when dealing with your administration or the Foundation itself.

Division of Mathematical Sciences (DMS)

The Division of Mathematical Sciences (DMS) supports a wide range of projects aimed at developing and exploring the properties and applications of mathematical structures. Most of these projects are those awarded to single investigators or small groups of investigators working with graduate students and postdoctoral researchers. Programs such as Mathematical Sciences Infrastructure handle activities that fall outside this mode.

DMS supports research through the following programs and activities:

- Algebra And Number Theory
- Applied Mathematics
- Analysis
- Computational Mathematics
- Geometric Analysis
- Statistics And Probability
- Topology And Foundations
- Mathematical Sciences Infrastructure Program
- Grants For Vertical Integration Of Research And Education
- Cross-Disciplinary Interactions

Proposals submitted to DMS for general conferences, workshops, symposia, special years, and related activities should be submitted to the appropriate disciplinary program. Proposals should be submitted one year in advance of the start of the activity. Contact the Division for information on proposal requirements.

In addition to the usual types of research grants awarded to principal investigators and institutions, DMS supports the following:

- **University/Industry Cooperative Research.** DMS feels it is important to provide more opportunities to conduct research and training in an industrial environment and for industrial scientists to return periodically to academia. To facilitate both research and training, the Division provides Mathematical Sciences University/Industry Postdoctoral Research Fellowships, Senior Research Fellowships, and Industry-Based Graduate Research Assistantships and Cooperative Fellowships in the Mathematical Sciences.
- **Interdisciplinary Grants**. These grants enable faculty to expand their skills and knowledge into areas beyond their disciplinary expertise, and to subsequently apply the knowledge to their research as well as enrich the educational experiences and career options for students. These grants support interdisciplinary experiences at the principal investigator's (PI's) institution (outside of the PI's department), or at different institutions such as academic, financial, and industrial institutions, in a nonmathematical science environment.

Sample Programs:

- Mid-Career Methodological Opportunities (NSF 99-33)
- Integrative Graduate Education and Research Training Program (IGERT)(NSF 98-96)
- Optimized Portable Algorithms and Application Libraries (OPAAL) (NSF 98-64)
- Knowledge and Distributed Intelligence (NSF 99-29)
- Scientific Computing Research Environments in the Mathematical Sciences (NSF 99-48)
- Grants for Vertical Integration of Research and Education in the Mathematical Sciences (VIGRE) (NSF 99-16)
- Professional Opportunities for Women in Research and Education (POWRE) (NSF 98-160)
- Grant Opportunities for Academic Liaison with Industry (GOALI) (NSF 98-142)
- Mathematical Sciences Postdoctoral Research Fellowships (NSF 98-135)
- Faculty Early Career Development (CAREER) Program (NSF 98-103)
- Interdisciplinary Grants in the Mathematical Sciences (NSF 98-145)

Education and Human Resources (EHR)

The Directorate for Education and Human Resources (EHR) has primary responsibility for NSF's efforts to provide national leadership in improving science, mathematics, engineering, and technology education. Its comprehensive and coordinated programs address every education level (i.e., pre-kindergarten through postdoctoral study), as well as early career development and science literacy in the general public.

EHR has five major long-term goals that provide the focus for the various activities of the seven divisions/offices described here. These goals ensure that:

- Standards-based science and mathematics education is available to every child in the United States, thus enabling all who have interest and talent to pursue technical careers at all levels;
- The educational pipelines that carry students to careers in science, mathematics, and engineering yield adequate numbers of well-educated individuals who can meet the needs of the technical workplace in the United States;
- Those who select science or engineering careers have available the best professional undergraduate and graduate education, and opportunities are available at the college level for interested nonspecialists to broaden their scientific backgrounds;
- The instructional workforce has the disciplinary and pedagogical skills to ensure an excellent education for every student and learner; and
- Opportunities for quality informal science education are available to maintain public interest in, and awareness of, scientific and technological developments.

EHR programs intend to reform education venues and strengthen education pipelines, so that all students are well prepared for an increasingly technology-driven society and workplace. Programmatic foci of the directorate include systemic reform of science and mathematics education in grades K–12, and the development of resources critical to that reform; preparation of the instructional workforce; achievement of an integrated understanding of institutional reform at the undergraduate level; cultivating a research base of knowledge for implementing innovative reform strategies in grades K–16; advanced training of scientists, mathematicians, and engineers for the 21st century; and the application of technology across all education levels (of particular interest are projects that integrate content, technology, and pedagogy).

The EHR Directorate comprises the following Divisions:

- Division of Educational System Reform (ESR)
- Division of Elementary, Secondary, and Informal Education (ESIE)
- Division of Undergraduate Education (DUE)
- Division of Graduate Education (DGE)
- Division of Human Resource Development (HRD)
- Division of Research, Evaluation, and Communication (REC)
- Experimental Program to Stimulate Competitive Research (EPSCoR)

Division of Undergraduate Education (DUE)

Within EHR the Division of Undergraduate Education (DUE) serves as the focal point for NSF's efforts in undergraduate education. Whether preparing students to participate as citizens in a technological society, to enter the work force

with two- or four-year degrees, to continue their formal education in graduate school, or to further their education in response to new career goals or workplace expectations, undergraduate education provides the critical link between the Nation's secondary schools and a society increasingly dependent on science and technology.

DUE's programs and leadership efforts aim to strengthen the vitality of undergraduate science, mathematics, engineering, and technology (SMET) education for all students, including SMET majors, prospective teachers of grades pre-K–12, students preparing for the technical workplace, and students in their role as citizens in a technological society.

Projects submitted to programs in DUE are encouraged to incorporate, as appropriate, features that address one or more of four themes that have been targeted for special emphasis. These themes are teacher preparation, professional development for faculty, increasing diversity within SMET fields, and integrating technology in education. Although the activities described below are expected to constitute the majority of projects supported through DUE, proposals that address other mechanisms for improving undergraduate SMET education will be considered.

DUE supports research through the following programs and activities:

- Advanced Technological Education
- Course, Curriculum, and Laboratory Improvement
- NSF Collaboratives for Excellence in Teacher Preparation

Sample Programs:

- Advanced Technological Education (NSF 99-53)
- Centers of Research Excellence in Science and Technology (CREST)
- Collaborative Research on Learning Technologies (CRLT)
- Course, Curriculum, and Laboratory Improvement (NSF 99-53)
- Graduate Teaching Fellows in K–12 Education (TBA)
- Integrative Graduate Education and Research Training Program (IGERT) (NSF98-96)
- Optimized Portable Algorithms and Application Libraries (OPAAL) (NSF 98-64)
- Professional Opportunities for Women in Research and Education (POWRE) (NSF 98-160)
- Major Research Instrumentation Program (NSF98-16)
- Minority Research Planning Grants and Career Advancement
- New Computational Challenges (NCC)
- NSF Collaboratives for Excellence in Teacher Preparation (NSF 99-53)
- Presidential Early Career Awards for Scientists and Engineers
- Research Experiences for Undergraduates
- Research in Undergraduate Institutions

- Research Opportunity Awards
- Urban Research Initiative