



# Mission Review

September 29, 1998

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## Introduction

This report provides answers to questions on Mission Review posed by the Office of the SUNY Provost in his April 2 letter to campus Presidents. Provost Salins' letter and attached materials are included in the Appendix to this report.

Initial drafts of this report were prepared by a task force of faculty, staff and administrators assembled by the Office of the Provost and the Executive Committee of the University Senate. Members of the task force are:

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## **CAMPUS SELF-DESCRIPTION**

### **1. In no more than a paragraph, describe the central and distinctive elements of your mission and your institutional aspirations.**

The University at Stony Brook's aspiration is to be a world-class, student-centered research university that is the flagship campus of the SUNY system and the institution of choice for many of New York's and the nation's finest students. This goal is lent credibility by the identification of Stony Brook as one of the top fifteen research institutions in this country, and one of the top three public research universities (Graham and Diamond, 1997, *The Rise of American Research Universities*, Johns Hopkins University Press) and by *Change* magazine's designation of Stony Brook as the flagship of the SUNY system. Stony Brook's new responsibility for the management of Brookhaven National Laboratory is testimony to the quality of our programs in science, engineering and the health sciences. The quality of the undergraduate programs at Stony Brook was recognized by the National Science Foundation when it gave one of ten national Recognition Awards for the Integration of Research and Education to the University in 1997. The Boyer Commission led by Stony Brook's President, Shirley Strum Kenny, produced the recent Boyer Commission Report, *Reinventing Undergraduate Education*.

Stony Brook's distinctive mission is to use its research and scholarly resources to educate students, advance knowledge, and to provide patient care, community service and economic development for Long Island and New York. We achieve this mission by:

- offering education to diverse populations of citizens in a comprehensive set of disciplines in programs at the undergraduate, graduate and professional levels

- integrating research into our educational programs at all levels and providing a research based education to undergraduates that is distinctive from opportunities available at liberal arts colleges
- providing a broad-based student life program which nurtures holistic student development, cross-cultural understanding, wellness and practical application of classroom theory
- providing the latest biomedical and clinical research that advances the science of medicine and related disciplines and supports world-class patient care
- operating the only tertiary care hospital serving a population base of 2.7 million people on Long Island
- providing an environment that nurtures creative scholarship in the natural sciences, social sciences, humanities, and applied sciences
- stimulating economic development through innovative industrial, technological and biomedical applications that derive from our research programs
- providing outreach programs in arts and the sciences that improve citizens' understanding of our world and culture.

**2. What institutions, in terms of overall academic characteristics, do you regard as your current *and* aspirational peers?**

Stony Brook's excellent research reputation places it among the best public and private institutions in the world (Graham and Diamond, 1997), and a combination of criteria place it at the middle level of American Association of University Campuses (*Change*, May/June 1996). Some of our current peers among public universities, by these latter criteria, are Indiana University, Ohio State University, Pennsylvania State University, Rutgers, University of Arizona, UC Davis, UC Irvine, UC Santa Barbara, and University of Virginia. Examples of our aspirational peers in terms of reputation, quality and financial resources are the UC Los Angeles (including Health Science Center), UC San Diego, UC San Francisco Medical School, University of Illinois at Champaign-Urbana, University of Michigan, University of Texas at Austin, University of Wisconsin at Madison, and the University of North Carolina. This latter group is already our peer group in terms of many of our research programs, but we aspire to raise the rest of our programs *and* our undergraduate appeal to a similar level.

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## **Campus Demography**

**3. Your current enrollment objectives for 2001-02 submitted in Spring 1997 call for an Admit Accept Full Time Equivalency of 15,306 at the core campus and 2,306 at the Health Sciences Center. A recently received proposal**

**reduces the Admit Accept Full Time Equivalency at the core to 14,949 and increases it at the Health Sciences Center to 2,400. Do you anticipate any additional changes in your enrollment objectives?**

We intend to add about 2000 full time undergraduates to the core campus programs over the next five years (see the table in the appendix). Compared to the 1996-97 Academic Year baseline, enrollment increased in the 1997-98 Academic Year by 515. Application numbers increased for that year and again for the 1998-99 Academic Year, by about 6.5% each year due to more effective recruiting strategies and improved public awareness of the strengths of Stony Brook programs. Increased enrollments in professional programs will occur primarily through the doubling of enrollments in engineering and applied sciences and the development of new offerings such as the MBA in Technology Management. The University is confident that the projected enrollment increases will be realized. The increase in enrollment will be accompanied by a concurrent increase in the number of high achieving students, thereby continuing to raise the credentials for our admitted class.

**4. Do you anticipate any significant changes over the next five years in the mix of students or the demographic characteristics of your student body? (Such changes may include, but are not limited to, undergraduate/graduate, full-time/part-time, transfers/freshmen, and residency.)**

Over the last forty years, Stony Brook's emphasis has been on building a strong research university *ex nihilo*. The result of this highly successful effort is a relatively high proportion of graduate students compared to other high-quality public research universities. Our plan for increasing the number of undergraduate students is compatible with our capacity and educational opportunities and is consistent with "market" forces. Our student-faculty ratios will remain low enough to be compatible with our principle of integrating the scholarship and research activities of a great research university with education at all levels.

The demographic characteristics of our students will not be very different in the future with two exceptions. We expect an increase in older students as part-time programs expand at the undergraduate and graduate levels. Also, as Stony Brook's reputation for undergraduate education grows and admission becomes more selective, we will have a larger proportion of out-of-New York State undergraduates.

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## **Programmatic Mix**

**5. What aspects or features of your current academic programs are especially distinctive and why?**

The hallmark of our academic programs, an emphasis on collaborative research and the student community, reflects our goal of being a student-centered research university. Our new freshman education program and numerous outstanding special programs and opportunities allow students to work closely with faculty members who are actively engaged in creating new knowledge. They provide students with opportunities to develop that sense of community which is essential to success both in the academy and beyond. And they afford many opportunities for students to engage in hands-on research across the disciplines. The concept of both student and faculty collaboration in research underlies all of our recent educational initiatives.

Among our unique undergraduate programs, the Undergraduate Research and Creative Activities program acts as a conduit for students interested in pursuing research while the National Science Foundation-sponsored program, Women in Science and Engineering, a highly acclaimed program targeted at a large and growing segment of the student body, offers students opportunities through curricular and extracurricular activities and fosters a community of experience. Our Living/Learning Centers and the Honors College engender a sense of both academic and social community through educational programs keyed to residence life. The longstanding Federated Learning Community uses faculty collaboration to develop unique programs each year. Finally, beginning this Fall, in a first step toward expanding learning communities throughout the curriculum, the University Learning Communities program provides first-year students with small courses linked through faculty collaboration and a special linking seminar designed to build a sense of community as it encourages collaborative research and addresses students' skills deficits.

Stony Brook has always been at the forefront in discovering and disseminating reform-minded innovations in undergraduate education. Most notable among our faculty's early achievements were the calculus reform movement and the new Liberal Arts program for science literacy. One example of recent innovation is in General Chemistry, where recitation sections have been replaced with process workshops. This novel format emphasizes both subject mastery and skill development in the key process areas of information processing, critical thinking, problem solving, communication, teamwork, self-assessment, and management. Our faculty continues to receive national recognition for their efforts in curriculum reform. In 1996, one of our faculty members received the Innovators in Higher Education Award from Microsoft Corporation for a software system for instruction over the Web that has provision for peer evaluation of on-line assignments, making frequent written assignments practical in courses with large enrollments. This past summer, another faculty member was awarded the prestigious Educom medal for his innovative computer-based system of instruction in linguistics.

Students attend Stony Brook because of its excellence as a research university and more than a third of our undergraduates engage in research activities across the disciplines during their Stony Brook experience. These programs encourage and facilitate these activities. In addition, because we are committed to the notion that neither students, nor faculty, nor disciplines should be kept in isolation, we offer a variety of interdisciplinary majors, minors and programs. In addition to minors affiliated with the Living/Learning Centers and Federated Learning Community we offer, for instance, a major in

Pharmacology that requires collaboration between the Health Sciences Center and the College of Arts and Sciences, minors in Bioengineering and Biomedical Engineering that involves collaboration among the medical school, the College of Arts and Sciences and the College of Engineering and Applied Sciences, and the Multimedia User Interfaces Program and the Computer-Human Interaction Program that are jointly offered by the Computer Science and Psychology departments.

Finally, on the undergraduate level, we support programs aimed at facilitating the entry of underrepresented minorities and again, these programs reflect our commitment to community and collaborative research. The Alliance for Minority Participation is an National Science Foundation supported SUNY-wide program led by Stony Brook, designed to assist students in science, engineering and mathematics. The Howard Hughes Program in the Biological Sciences facilitates the entry of all students but especially minority students into research. And programs in the School of Social Welfare are distinctive in that African American and Hispanic enrollment has been in the top 5% of social work schools in the U.S.

At the master's level, our Master of Arts in Liberal Sciences (Liberal Studies) has been extremely successful in matriculating part time students. Our graduate certificate programs in Women's Studies and Cultural Studies are extremely innovative. The master's program in Nursing is distinctive in its use of computer-mediated distance learning and is attracting growing numbers of out-of-state students. The School of Social Welfare has developed a new health curriculum that provides all social work students with basic knowledge of health programs, policies, and practices, and how these affect individual and societal well being.

Many professional programs in the Health Sciences Center are distinctive.

- The School of Nursing's highly innovative program in midwifery by distance learning
- The School of Health Technology and Management joint program with the Harriman School leading to an advanced certificate in health care management
- The Dental School's comprehensive range of postgraduate programs
- The School of Medicine's National Institute of Health funded M.D./Ph.D. program
- The M.D. with distinction in Research or in Medical Humanities offered to medical Students
- The School of Social Welfare's new Ph.D. program in health policy.

At the Ph.D. level, the distinction of Stony Brook's programs is their excellence on a national and international scale. Of SUNY's ten doctoral programs rated by reputation in the top quartile in the 1995 National Research Council report *Survey of Research Doctorate Programs in the United States*, nine are Stony Brook programs (Biochemistry, Cell and Developmental Biology, Ecology and Evolution, Genetics, Mathematics, Music, Pharmacology, Physics and Psychology). [The tenth is the Buffalo English program.] Two programs were rated in the top ten in the nation (Oceanography #8, Ecology and

Evolution #10). Four of our doctoral programs (Astronomy, Biomedical Engineering, Materials Science and Engineering, and Oceanography) are the only ones available at a public institution in New York State. Within the public sector of New York's higher education system nineteen Stony Brook programs are given the highest rating by the National Research Council, i.e., the top rated program available to students at any CUNY or SUNY school (Astronomy, Biochemistry, Cell and Developmental Biology, Chemistry, Comparative Literature, Computer Science, Ecology and Evolution, Economics, Genetics, Geosciences, Mathematics, Materials Science, Neurosciences, Oceanography, Pharmacology, Physics, Political Science, Psychology and Sociology). Three more were rated as the best in SUNY (Electrical Engineering, Music, Philosophy). Of the thirty doctoral programs offered by Stony Brook that were included in the rankings by the National Research Council, 22 were assessed as the best program in SUNY.

The National Research Council reputation survey results are well known to correlate with program size, and hence tend to bias against programs that are small compared to national averages. Some of our smaller programs have focused their efforts on a subset of an entire discipline and can be shown by the objective measures of publications, grants and citations to be performing in these areas at a level equivalent to programs in the National Research Council top quartile. Examples are Anthropological Sciences (emphasis in Physical Anthropology) and Political Science (emphasis in Political Psychology). The Provost's 1996 *Academic Plan* calls for having every doctoral program ranked in the top quartile, or to have faculty scholarly productivity equal to the median of programs ranked in the top quartile. This will ensure that the doctoral education that Stony Brook offers is at the very highest level, while accepting some limitations to its breadth that are dictated by the relatively small size of Stony Brook's faculty compared to most public research universities.

## **6. What are your priorities for program building?**

Priorities for program building in academic and research sectors are consistent with Stony Brook's mission as stated in question # 1 above and extant planning documents: The President's *Five Year Plan 1995-2000*, and the Provost's *Academic Plan*. Resources are allocated to existing academic units according to the following criteria: centrality; student demand and outcomes; program quality as measured by university reviews, accreditations, reputation surveys, and faculty productivity. While we preserve core strengths, new programs are created based on criteria such as student demand, likelihood for programmatic impact, and leveraging opportunities. Initiatives are supported by a combination of redirected allocations from the base, additional enrollment-driven revenues, and incremental external funds.

### **a. In light of those priorities, what program changes (e.g., new, reconfigured or discontinued programs, shifting emphasis on graduate vs. undergraduate programs) do you anticipate over the next five years?**

New program initiatives with a strong undergraduate component include Environmental Studies and Asian Studies both of which are motivated by strong student interest, faculty

strengths in these areas and potential synergies. The Asian Studies initiative resonates with the Charles Wang \$25M gift to Stony Brook for an Asian-American Cultural Center.

The current reorganization of programs in the Humanities and Fine Arts is designed to focus resources on areas of excellence, to expand existing strengths, and to tailor course offerings to the needs and interests of our students. The major rebuilding of English will restore the national prominence of a department that has suffered significant losses. Also underway is a major restructuring of the Writing Program, including plans both for improving and extending the teaching of writing in the disciplines and for closer links to English as a Second Language program for students who are not native speakers. Strengths across several departments are being focused or consolidated. Examples are: the new Cinema and Cultural Studies major (with faculty from Art, English, Comparative Literature, Philosophy, and Foreign Languages); the New American Studies program (with similarly broad interdisciplinary participation including several social science departments); and the reorganization of the French & Italian and Germanic & Slavic Departments into the Department of European Languages, Literatures, and Cultures focusing on undergraduate language and literature instruction, and teacher training at the undergraduate and master's level.

Responding to student demand, research opportunities, and industrial needs, the College of Engineering and Applied Sciences has embarked on a program to double the size of its undergraduate programs over the next two to four years with important funding support from industry and state government. The need for this growth is evident from the fact that the Long Island region produces very few engineers per capita in comparison to other high technology regions in the nation. Increased size might include the creation of departments of industrial, chemical, civil and environmental engineering.

New masters or professional degree initiatives include the proposed MBA in Technology Management, Master of Arts in Teaching both in Life Sciences and Mathematics, and an MS in Biotechnology. The School for Professional Development and the College of Engineering and Applied Sciences are increasing the development and delivery of graduate certificate programs in technical and management disciplines. The MBA in Technology Management is needed and strongly supported by regional industry--external reviewers believe that the program will have national and international appeal. Our new concentration in Public Policy in our MA in Political Science is offered in response to interest from local government; if successful, this may become a separately registered MA in Public Policy.

In the Health Sciences Center, planning for a Master of Public Health is in progress. The School of Health Technology and Management has more than doubled its enrollment over the last few years and implemented two new programs in occupational therapy and in cytotechnology. The Physical and Occupational Therapy programs will transition from a baccalaureate to an MS degree program within the next three years in order to meet what will be the profession's entry-level degree requirements. The Clinical Laboratory Science Program will soon offer four additional therapy tracks, (labor-atory information systems, environmental health, forensic diagnostics instrumentation), in addition to



certification in clinical laboratory sciences. The School of Social Welfare has also completed negotiations with Tuoro Law Center to offer a dual degree in law and social work in order to meet the increasing demand for graduates with these two areas of expertise.

Under the auspices of the School of Medicine and University Hospital, The Cancer Institute of Long Island will be an active-matrix style clinical and basic research facility. The Cancer Institute will provide a template for a concerted, multidisciplinary approach to basic and clinical research, detection, and molecular analysis of cancer, comprehensive care of cancer patients, and developments of new diagnostics and therapies targeting cancer. Working in close collaboration with the Brookhaven National Laboratory and Cold Spring Harbor Laboratory, The Cancer Institute will augment major research efforts that will make optimal use of resources shared by the three institutions, all in close proximity. It will serve the greater Long Island region, a population of nearly 3 million, as a support center for regional activities in cancer research, training, and community service, providing a regional network for physicians, cancer-awareness groups, and other medical facilities in the area. It will provide state-of-the art clinical care to Long Island cancer patients.

Several new programs in the biological and medical sciences, primarily driven by research and graduate education opportunities, are being launched. These interdisciplinary programs draw from existing faculty in the School of Medicine, the College of Arts and Sciences, the College of Engineering and Applied Sciences, and have important links to research at Brookhaven National Laboratory and at Cold Spring Harbor Laboratory. The new Centers for Molecular Medicine building will house five different thematic centers of basic molecular biology/medicine including the research component of the Cancer Center. A Biomedical Engineering program, recently established with Ph.D. and postdoctoral training programs, has Whitaker Foundation support in addition to standard individual grant support. The Howard Hughes Medical Institute has provided a grant in addition to substantial rental income for the laboratories of our Hughes Fellow to allow us to renovate a building in our Life Sciences cluster as a Laboratory for Brain Research. This facility will house an interdisciplinary faculty group engaged in fundamental biomedical research directed towards an understanding of the organization and function of the human nervous system. In addition, a study group is examining the feasibility for an interdisciplinary program in cognitive/behavioral neuroscience and/or in computational neuroscience, to build on our core strengths in Neurobiology, Psychology, Psychiatry, Neurology and other areas.

**b. Would such changes require additional faculty or facilities?**

Yes. Stony Brook is in real danger of compromising the quality and quantity of all its missions by a long-term reduction the number of faculty. These changes are documented in the chart in the appendix, which shows that full-time faculty numbers have been falling at Stony Brook for about ten years. The University has adapted to this decrease in resources by using an increasing number of part-time faculty who supply some of the

teaching needs we require but rarely, if ever, contribute to the research and service missions of the institution.

New programs usually build on existing faculty strengths. Additional resources needed for initiatives can be derived from a combination of increased enrollments, reallocation from within existing resources according to our priorities, and from new external support. It is critical at this stage in Stony Brook's development that the SUNY administration and trustees actively seek new resources for new programs.

Additional faculty will not be needed for the development of Physical Therapy in the Health Science Center (see answer to question 6a above). However, additional research/laboratory facilities for faculty and students will be needed. The development of the Occupational Therapy program will require additional staffing both to teach the planned advanced levels, and to coordinate the two-year college program. Additional resources would also be needed to implement expansion of the undergraduate program in School of Social Welfare.

On a campus-wide level, our larger enrollments and new programs will require more residence halls, reconfigured classroom and teaching laboratory space, and modernization of some existing teaching spaces. The new Centers for Molecular Medicine helps significantly in our expanding biomedical research, but does not solve our research space shortage; research space across the campus is becoming increasingly scarce as research activity increases. Additional space will be needed to support our potential for continued growth. Many of these needs are reflected in the five-year capital needs proposal that Stony Brook has submitted to the State University Construction Fund.

**7. How do your priorities and anticipated program changes relate to the mission of your campus?**

Our priorities for program changes as outlined in question # 6 a. are consistent with our mission as a public research university and health science center. More than ever in the past this University is developing programs that have direct impact on regional issues or economy. More discussion on this issue is given in question # 26 below, but here are a few examples of potential new programs that would have particular impact: two principal emerging industries on Long Island are Biotechnology and Information Systems, each of which requires a workforce with education beyond the baccalaureate but not to the doctoral level. Our Center for Advanced Technology in Medical Biotechnology is exploring the development of an MS in Biotechnology designed to prepare skilled laboratory managers for the industrial, health and research labs in biotechnology. This program, and that in Information Systems, will have some of the features of our existing, successful, MS in Instrumentation in the Physics department.

**8. In recruitment of students and in academic program development, is there a particular regional or local focus to your efforts? If so, please explain.**

Our primary undergraduate student population will continue to come from within New York State and especially the downstate metropolitan region. However, we are working to increase our out-of-state and international undergraduate populations. Such diversity enriches the institution and especially the quality of the undergraduate education that we offer.

At the masters and professional certificate levels, our focus is local and regional. We particularly emphasize the health, biotechnology, information, financial and computer industries in order to respond to Long Island and New York State needs. However, we attract a substantial number of self-supporting master's students from overseas and we are seeking to increase this number. At the doctoral level, our focus is national and international, though we strive to produce graduates that serve the region's needs for faculty and research leaders.

In the Health Sciences Center, the School of Social Welfare is the only low-cost professional social work school available to three million residents of Long Island and will continue to serve both them and residents of metropolitan New York. The School of Nursing distance learning program will continue to expand its enrollment of nurses who do not have access to advanced professional education; such students come from all regions of the country. The School of Health Technology Management will continue to attract high quality applicants from all parts of the state due to its reputation and low tuition (compared to private universities). The Schools of Medicine and Dentistry will continue to draw a statewide applicant pool. The National Institute of Health funded Medical Scientists Program (M.D./Ph.D) will continue to attract highly qualified students from across the nation.

**9. What do you see as the proper role and scope of baccalaureate programs at a campus that is seen primarily as a two-year institution?**

With very few special exceptions, baccalaureate programs should not be offered at two-year institutions. At the junior and senior level, students' education is importantly enhanced when they learn from faculty fully conversant with current thinking in their disciplines. Similar observations can be made about master's degree programs at primarily baccalaureate institutions, and doctoral programs at non-research universities. We do not believe the state of New York will allocate the resources to allow many of the SUNY institutions to expand the range of their educational programs without endangering existing quality and endangering the potential of many institutions to improve the quality of the missions they now serve.

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## **Undergraduate Admissions Selectivity**

**10. Attached to this document is a chart containing definitions of five different categories of institutional admissions selectivity.**

**a. Which category best describes your campus' current selectivity?**

For the 1998-99 Academic Year, 43% of the admit pool falls into Group 1 (Most selective), 39% falls into Group 2 (Highly selective), and 18% falls into Group 3 (Very selective). So, by definition we are in Group 2.

**b. If you aspire to move your institution to a different level of selectivity, what level do you wish to achieve?**

We intend to continue to increase the proportion of our admit pool that conforms to Group 1 and expect to move quite quickly to Most selective (60% of admit pool = Group 1). However, Stony Brook serves an undergraduate population that is derived in large part from the five boroughs of New York City. We intend to continue to provide a first class education in a research university setting to these students. It is important to recognize that many of these students are first generation Americans whose abilities may not best be characterized by SAT scores, or even high school averages. We think it is equally important to look at outcome measures and especially to look at the value added by a college education. Our experience has shown that many such students perform at a very high level in the college setting once their language skills have been improved. It is noteworthy that in looking at average SAT scores for New York State residents, math scores are seven points higher than verbal scores. By contrast, the difference for Stony Brook's admitted class for fall 1998 is much more pronounced —37 points. We believe that the math scores of our admits are better indicators of ability because the verbal score is so sensitive to the test taker's first language.

We also emphasize our strong belief that maintaining a diverse student body is important for the intellectual and personal growth of all in the Stony Brook community. Measures such as success in post-baccalaureate placement, national scholarships, participation in national research conferences, and a huge range of other achievements all show our students gain much from Stony Brook. Data from our fall 1996 survey of recent graduates show that 38% are continuing their education (19% doctoral study, 10% Law, 59% Master's programs, 12% other), 36% are in a career job, with a further 12% in a job that the graduate feels will lead to a career job. Since 86% of our graduates have successfully moved on to the next stage of their education or career within six months of completion or expect to do so soon, it is clear that there is a large value-added component to a Stony Brook education. The credentials of our entering class provide some challenges and we are proud that our graduates fare so well in the job and further education competitions. Nonetheless, we have found that students who enter with a high school average of 90 or better (regardless of SAT scores) graduate at a significantly higher rate than other students so we believe that a student body characterized by Group 1 selectivity will be still better positioned to take advantage of the opportunities at Stony Brook where there is a comprehensive range of disciplines, and where research and scholarship are integrated into the learning experience.

**c. What changes do you seek to make over the next five years in the admissions profile of your entering class in order to help you achieve your aspirations?**

It is our goal to move Stony Brook to a level of admissions selectivity that results in 60% of accepted students falling into Group 1. This will require a continuation of the increases we are experiencing in the academic quality of our inquiry, applicant, and admit cohorts. We have already noted that the number of applications has increased by an average of 6.5% for each of the last two years.

	Group 1 Admits	Groups 1&2 Admits	Mean SAT(reg admit)
Fall 1996	21%	45.4%	1144
Fall 1997	33%	72%	1151
Fall 1998	43%	81%	1178

To achieve our goals, current recruitment initiatives targeting high achievers will be continued and expanded. The campus will place greater attention on marketing and on developing recruitment and yield strategies specific to the superior students who can best benefit from and take advantage of a top rated research university. Further, the University will continue to increase the scholarship pool both through private fund raising and through grant support for targeted student cohorts (e.g., the National Science Foundation support for *Women in Science & Engineering* and *Alliance for Minority Participation* students). We will also increase our efforts to attract out-of-state students to Stony Brook.

In light of our recent achievements and increasingly widespread recognition of Stony Brook as a world class public research university that is leading the integration of research and education, we are confident we can continue to increase our enrollment and admit a higher proportion of Group 1 students such that the overwhelming majority of our students will be well matched to the academic opportunities found at Stony Brook.

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## **Undergraduate Education**

**11. Against which institutions, both within SUNY and elsewhere, do you compete for undergraduate students?**

Our top ten competitors for freshman students are SUNY Binghamton, New York University, SUNY Albany, SUNY Buffalo, Hofstra, Cornell, St. John's, Boston University, Columbia, and SUNY New Paltz, in that order. For example, for the Fall of 1997, 3,461 students applied to both Stony Brook and Binghamton, 2,915 applied to both Stony Brook and NYU, 2,566 applied to both Stony Brook and SUNY-Albany, and 2,030 applied to both Stony Brook and SUNY-Buffalo. For students in the top 10% of their high school classes (about 25% of our enrollees), the principal competition arises from Columbia, Cornell, Boston University, SUNY Binghamton, NYU, Brooklyn College of CUNY, Penn State, City College of CUNY, and SUNY Geneseo, in that order. These results are based on College Board reports of colleges to which SAT scores are sent.

Schools in the Health Sciences Center have a competitive advantage because applicants have already decided on a career direction and compete with other applicants to gain admission to the program that prepares them for entry into their chosen fields. While there are many reasons an applicant will accept an offer of admission, the most important is "quality of program", confirming Stony Brook's reputation for excellence in clinical education. Graduates of the Health Sciences Center schools have a greater chance of being successful on their first attempt on licensing exams than graduates of most other schools in the health professions in the state. The School of Health Technology Management, Physicians Assistants program continues on the average to have a 98% licensure pass rate and is considered on of the top ten programs in the country. Applicants who are not offered admission to Stony Brook may be admitted at Columbia, NYU, or many other schools. The Nursing School program is among the most desirable in the greater New York Region, competing directly with Columbia University. Medicine and Dentistry are highly competitive. Entrance exam standing for Dentistry is one of the highest in the State (Private and Public) and the entrance exam standing for the School of Medicine is in the top third (Private and Public).

**12. How do your institution's undergraduate admissions practices contribute to the University's objective of providing broad access to the citizens of New York?**

Stony Brook has always been especially attractive to students who are the first of their families to attend college and to minority students who aspire to graduate or professional degrees. Stony Brook draws an overwhelming percentage of its applicant pool from New York City and Long Island, a region that has a population larger than many states in the nation. Many students are from families without the means to send children to more distant and expensive institutions. As we have shown in our response to question #10, these students' credentials require close examination to identify indicators for success and Stony Brook is tremendously successful in preparing this population for career employment or further education. For students who are the first college bound generation, being closer to home is psychologically and socially helpful. The physical proximity,

reasonable costs and outstanding education, which Stony Brook offers, are major benefits to the citizens of New York.

A broad range of admissions (and post-admissions) programs ensures broad access to Stony Brook. Geographic breadth in our student body is sought through intensive participation in college fairs statewide, by the Alumni Volunteer Program, and by our work with guidance counselors' associations. The Special Admissions program reaches out to handicapped students and to students with special talents, for example in fine arts. Students with strong academic promise despite poorly developed English skills are provided English-as-a-second-language courses and special advising under the Language Enhancement Program. Several programs (including Women in Science and Engineering, Undergraduate Research and Creative Activity, the Honors College and Honors Program, the Living Learning Communities) attract highly motivated and high-achieving students to Stony Brook. We have several programs supported in part by the National Science Foundation or the Howard Hughes Medical Institute Program for Undergraduates for attracting under represented minorities into science, mathematics, or engineering including:

- Howard Hughes Medical Institute Program in the Biological Sciences;
- Partnership for Recruitment and Innovation in Education;
- SUNY Alliance for Minority Participation;
- the Biology Participation in Research and Education Program, a National Institute of Health supported partnership with Nassau and Suffolk Community Colleges aimed at helping underrepresented minorities move into advanced study.

The Advancement on Individual Merit program provides a broad range of support services to attract and assist economically and academically disadvantaged students. Our program has contributed to the graduation of more than 1,500 New York citizens, and it includes about 5% of our current undergraduate population. The program is holistic in nature and provides an array of academic and support services including: personal counseling; academic and financial aid advising; career counseling; tutoring; peer mentoring; and a mandatory intensive six-week academic pre-Freshman summer program.

Transfer access is improved by coordination with our principal feeder colleges (Suffolk, Nassau, and Farmingdale) and by easy transfer of general education credits for students with Associates in Arts and Associates in Sciences degrees from CUNY and SUNY two-year colleges. Of entering transfer students in fall 1997, 21% were from Suffolk Community College, 12% from Nassau Community College, and 5% from Farmingdale. 18% were from other SUNY schools, and 13% from CUNY.

An essential component of providing broad student access is financial aid, since 39% of our freshman students and 46% of our transfer students come from families with annual incomes below \$30,000. Students entering in fall 1998 will receive about \$1.1 million in scholarship aid, a substantial increase from previous years, but still a small sum

compared to those provided by competitor institutions. All aspects of financial aid packages (scholarships, loans, student employment, and internship opportunities) should be enhanced in order to increase further access to low-income students.

Programs in the Health Sciences Center provide relatively inexpensive programs of excellent quality and provide access to educational and employment opportunities to many students who are the first members of their families to attend college. Access is enhanced by flexible scheduling of on-site courses, including evening and weekend classes, the option for part-time study (in Nursing and School of Social Welfare), a condensed one-year program for college graduates who are changing from their first career into nursing, and a distance learning program at the masters level for nurses who have previously not had access to advanced professional education due to distance or life circumstances. The School of Health Technology Management is in their final segment of a three-year grant that has focused on increasing enrollment of students (emphasis on minorities) into the allied health professions.

**13. Please describe the General Education offerings on your campus and the philosophy undergirding your approach to General Education. Are there ways in which you would like to strengthen your program (including, for example, any revisions based on the January 1998 report of the Joint Task Force on General Education of the University Senate and the Faculty Council of Community Colleges)?**

The current Stony Brook general education program, the Diversified Education Curriculum, was first implemented for students who entered in fall 1991. As applied to Arts and Sciences students, it organizes fourteen general education requirements into four groups: **Entry Skills** - Basic Mathematics Competence, Basic Writing Competence, Elementary Foreign Language (3 yrs. H.S.); **University Skills** - English Composition, Interpreting Texts in the Humanities, Mathematical and Statistical Reasoning, Understanding the Fine and Performing Arts; **Disciplinary Diversity** - Natural Sciences, Social and Behavioral Sciences, Humanities (2 courses each); **Expanding Perspectives and Cultural Awareness** [Implications of Science and Technology, European Traditions, the World Beyond European Traditions, American Pluralism]. Engineering and Applied Science students have a somewhat reduced Diversified Education Curriculum program.

The overall intentions of the Diversified Education Curriculum are described in the Undergraduate Bulletin in the following terms: "General education requirements help students to place the more specialized parts of their undergraduate study, their major and pre-professional training, in a cultural and historical context. They also develop the intellectual skills necessary to enhance learning during the university years and later. In this complex world, distant places and history have a major effect on all human life. The knowledge of the variety, richness, and interdependence of the human experience that students gain during their undergraduate years will enrich their future professional and personal life. The person with a broad education in the arts and sciences and with well-developed communication and quantitative skills is most likely to flourish in changing



times." We believe that the Diversified Education Curriculum substantially incorporates the skills and knowledge/inquiry domains suggested in the 1998 report of the SUNY Joint Task Force on General Education.

After several years of experience with the Diversified Education Curriculum, we have recently reviewed its efficacy, in part through sampling student and faculty opinion. There were many suggestions for fine-tuning, but neither group expressed a wish for major restructuring. The students faulted inaccessibility of some needed Diversified Education Curriculum courses. Some faculty sought greater coherence in the Diversified Education Curriculum requirements, and some thought the Diversified Education Curriculum should do more to prepare students for effective participation in the research university. A lingering concern is the large number of courses that satisfy some Diversified Education Curriculum requirements and the impression that not all have been designed for the Diversified Education Curriculum. The administration intends further review of Diversified Education Curriculum requirements and course syllabi in order to ensure good balance among breadth, connection with general Diversified Education Curriculum category themes, and specificity.

We have substantially remedied past access problems. We are addressing perceptions of incoherence and dislocation through the development of University Learning Communities, beginning this fall with the Freshman Learning Communities program. Entering freshmen register for a common group of courses coordinated by the faculty to foster transference of knowledge and skills across their courses. All the courses meet Diversified Education Curriculum requirements as does the "linking seminar" that integrates material from their common courses and offers a critical perspective on their content. Collaborative research projects help students develop critical learning and communication skills. Plans are underway to develop similar collaborative learning communities for upper-division students. As students specialize in their major, the learning community would maintain the broader critical perspective of general education, giving students a good sense of the place of their discipline in the field of knowledge. In addition, these communities will assist our large number of transfer students in making the transition to a research university.

#### **14. Environmental Studies/Environmental Science:**

##### **a. How would the program you have proposed reflect and support distinctive elements of your campus' mission?**

The development of the Environmental Studies major is a natural extension of existing programs at Stony Brook. We already have considerable faculty strength in all aspects of the environmental disciplines. We also have a long history of graduate education in environmental sciences and management (including programs in Marine Sciences, Atmospheric Sciences, Ecology, Environmental Management, and Waste Management). The major will be administered by the Marine Sciences Research Center and will apply the strengths associated with our graduate program to enhance the undergraduate mission of the University. In addition, our setting on Long Island is a perfect natural laboratory for training students in the complexity of environmental problems and solutions.

An environmental studies major also addresses two of the five goals in Stony Brook's current Academic Plan. These two goals are: 1) to "increase the quality and quantity of undergraduate enrollment and the quality of the undergraduate experience"; and 2) to develop "innovative intellectual explorations extending across disciplinary boundaries."

The environmental studies major also addresses a concern raised in the 1994 Middle States Accreditation Report, which noted the failure of Stony Brook to have a strong environmental curriculum as an opportunity lost. Indeed, the report states: "Environmental programs can and should be a major component of the University's efforts in the future. Stony Brook is rich in resources to mount a world-class effort in this area."

In addition, the Office of Undergraduate Admissions reports a strong demand from students for such program. Environmental studies/sciences is one of the two or three majors about which inquiries are most often made.

**b. Do you envision your Environmental program oriented toward professional training or the liberal arts? How so?**

The proposed environmental studies major is a liberal arts degree. The proposed curriculum is interdisciplinary and integrates principles and methodology from the social sciences, engineering, the natural sciences, and humanities. Students would receive a broad background in a variety of disciplines with introductory courses in anthropology, economics, political science, philosophy, biology, chemistry, mathematics, physics, and geology. At the upper-division level, courses will emphasize the multifaceted nature of environmental studies, and it is our intention to teach these courses with an interdisciplinary group of faculty.

Students are not being prepared for a specific job or profession. Instead, graduates would be expected to qualify for entry-level employment in environmental foundations, business and industry, consulting companies, and government working in positions associated with policy analysis and formulation, planning, environmental impact assessment, resource management, environmental journalism, research, and environmental education. This program would also provide basic preparation for later entry into graduate and professional study in fields such as environmental law, public policy, regional planning, public health, and environmental education. Students at Stony Brook wishing more specialized training in an environmental field at the undergraduate level would be directed to consider majoring in one of the supporting disciplines listed above.

**15. Are there unusual and distinctive ways in which your institution provides undergraduate student support services to achieve your mission?**

The Living/Learning Centers, home to about 1,900 students, is an exemplary program. Students live in a residence hall where activities are focused on a particular discipline or area of scholarship. The program fosters a strong sense of community, allows students to

form lasting friendships, and provides an intensive learning experience through shared courses and common themes. Current themes are Environmental Studies, Human Development, Interdisciplinary Arts, International Studies, Science and Engineering, Wellness, and the Honors College.

The Freshman Learning Communities Project is a recent addition in our efforts to develop innovative curriculum delivery. The concept is to provide linking courses for students enrolled in a common set of courses. These linking courses are designed to bring together common elements from disciplines in social and physical sciences, humanities and mathematics. Students in this program will learn together and develop a sense of community which is often lacking in a large academic institution (see answer to question #13 above).

Our mission to be a student centered research university is well illustrated by our Undergraduate Research and Creative Activities program. This program provides students with information on research opportunities in our faculty's laboratories, provides advising for students interested in pursuing research opportunities and ensures that students enrolled in research courses receive a meaningful and educationally sound experience.

The new Center for Excellence in Learning and Teaching is a forum for the discussion and practice of modern pedagogical techniques and learning and teaching philosophies. Using the latest advances in technology, demonstrations, interactive exercises, and corrective feedback procedures, the Center is an important resource for our educational mission.

In addition to its full range of counseling and therapeutic group clinical services, the Counseling Center hosts a weekly radio show, titled "Taking Care of Yourself." The Center is also a fully accredited (PA) psychology internship training site. Its collaboration with the University Medical Center's Comprehensive Psychiatry Emergency Program provides nighttime consultation to residence hall staff in determining whether a situation warrants emergency psychiatric intervention.

Student involvement in the delivery of service is very strategic to our vision of a student-centered University. Noteworthy are Campus Residence and Student Health Service peer advising groups in the areas of eating disorders, AIDS education, substance abuse, multicultural awareness, and sexual assault education offered to both campus and local high school students. A theatrical production sponsored by the Theatre Department and student assistants, "Swallow This," was humorous with dramatic portrayals of "real life student experiences" with alcohol and other drugs, to raise awareness of vital information and establish a connection behind substance abuse.

Opened in 1997, the Student Activity Center has quickly become the catalyst for community building reaching out to commuters. The Commuter Student Affairs Office provides a range of services including a lounge, a newsletter, coffee hours linking students with faculty and administrators, special orientation programs and events designed to foster faculty, staff, and commuter student interaction.

The University Ombud's Office provides an informal and confidential alternative for students seeking alternate dispute resolution and/or mediation pertaining to any problem or complaint they may have within the University. The Office also provides a welcoming place for students to explore options, gain information about campus policies and procedures, and identify opportunities for enhancement of campus services and programs.

The Career Placement Center has forged an interaction with business, industry and not-for-profit organizations implementing cutting-edge technologies supporting 24-hour student employer access to an on-line recruitment and resume system. The Center has recently received a national award for its Web site excellence.

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## **Teacher Preparation**

### **16. What aspects or features of your current teacher education programs are especially distinctive, and why? How would you characterize your campus' niche in the teacher education market?**

The strength of the teacher education programs at Stony Brook is that they are based in the academic departments and all students in the teacher education program major in the content area in which they will be certified. Stony Brook takes a "university-wide" approach to teacher education, which is coordinated by a Center for Excellence and Innovation in Education that reports directly to the Provost. A very distinctive aspect of our science teacher preparation program involves our Discover Lab, in the Center for Science, Mathematics, and Technology Education. In this Lab, our science teaching interns, using New York State's new *Framework for Science, Mathematics and Technology Education*, create an inquiry-based learning environment for elementary and secondary students from the local region. With faculty supervision, the teaching interns help students construct science concepts through interactive activities, student-designed investigations, and guided reflection. In addition, students from our Pre K-12 Teaching English to Speakers of Other Language teacher education program use the Discover Lab to develop learning units, which combine science and language development.

In our region of the State, (Nassau, Suffolk, Brooklyn, Queens, the Bronx and Manhattan), there is a growing demand for well qualified teachers particularly in the sciences (biology, chemistry, earth science, physics and mathematics), foreign languages, and Teaching English to Speakers of Other Languages. According to the periodic reports on the results of the New York State Teacher Certification Examinations, the percentage of Stony Brook students passing these tests is consistently among the highest percentage for the SUNY schools.

Stony Brook offers traditional undergraduate and graduate registered and approved teacher education programs and alternate registered and approved Master of Arts in Teaching degree programs for those individuals who make a later career choice to go into the teaching profession. At the undergraduate level, approximately 160 students per year complete one of Stony Brook's registered and approved teacher certification programs. About 40 students per year receive a Masters of Arts in Teaching. About 300 students per year receive the Masters of Arts in Liberal Studies degree, and 75% of these are teachers who use the degree to satisfy the requirements for "permanent" New York State Teacher Certification.

Stony Brook is a regional teaching resource center in other ways. The Long Island Group about Science Education, an National Institute of Health supported consortium led by Stony Brook and made up of Nassau and Suffolk Community Colleges, two area high schools, and biotechnology firms utilizing the Long Island High Technology Incubator, educates high school and community college faculty in current concepts and laboratory techniques in biotechnology. The National Science Foundation funded Long Island Consortium for Interconnected Learning in Quantitative Disciplines, led by Stony Brook and composed of ten two and four-year colleges, combines collaborative modes of learning with curricular innovation, educational technology and coordination of instruction across departments to improve teaching and students' learning of mathematically-based subjects.

Finally the highly successful Teacher Opportunity Corps Program prepares under represented students to enter the teaching profession, particularly those students interested in teaching in schools with a large population of "at-risk" students.

**17. Describe changes you anticipate during the next five years in teacher education at your institution. Include changes in size, scope, new programs or delivery methods, and populations served.**

Regional reports indicate a considerable increase in the demand for teachers due principally to retirement. Therefore, we expect to see growth in the number of students entering our undergraduate and graduate teacher education programs.

In order to meet the strong demand for science and mathematics teachers, we are planning a Master of Arts in Teaching in Biology and a Master of Arts in Teaching in Mathematics. The Letter of Intent for the Master of Arts in Teaching in Biology is currently under SUNY review; the Master of Arts in Teaching in Mathematics proposal will be sent to SUNY in the near future.

The newly-formed Department of European Languages, Literatures, and Cultures is discussing a plan to develop advanced pedagogical training and research in languages and literatures through the development of courses in new media technologies. This plan would depend on reconfiguring existing curricular and faculty resources in teacher training.

We will also expand the number of in-service teacher education courses from the current 27 per semester offered on-site in the public schools and at Nassau and Suffolk Teacher Centers. We will also introduce on-line electronic courses in teacher education.

**18. For each of the last five years, what percentage of students from your campus who receive a Certificate of Qualification obtain jobs in education or are continuing their education?**

In the past five years, 1016 students in the Stony Brook teacher education programs have applied for their Certificate of Qualification as follows: 1993-94 = 182; 1994-95 = 195; 1995-96 = 200; 1996-97 = 234; 1997-98 = 205. Although we currently have no formal system to track the percentage of our students who receive the Certificate of Qualification, the faculty coordinators for teacher education report that most of their students continue their education and have provided the following information about the percentage of students in teaching positions: Teaching English to Speakers of Other Languages 99-100%; Science 99-100%; Foreign Languages (French, Italian, German, Russian, Spanish) 95-100%; Mathematics 75-100%; English 60-80%; Social Studies 50% - 60%.

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## **Graduate and Professional Education**

**19. What are the defining characteristics of graduate and professional education at your campus?**

Stony Brook's goal is to train doctoral students at a level equivalent to the top 25% of programs in the nation. This applies also to the professional doctorates and sets the tone for our expectation of excellence in all post-baccalaureate programs. The most comprehensive study of the quality of doctoral programs is the National Research Council's *Survey of Research Doctorate Programs in the United States*, the most recent edition of which was published in Fall 1995. The National Research Council ranked nine of Stony Brook's doctoral programs in the top quartile based on their reputation. This places us in the middle of the sixty-two institutions that belong to the American Association of Universities and identifies Stony Brook as the leading public research university in the northeast.

While reputation is important, we are also concerned to be certain that whatever we do, we do at the highest possible level. The recent study by Graham and Diamond (*The Rise of American Research Universities*, Johns Hopkins University Press, 1997), studied faculty productivity as measured by publications in top scholarly journals. It found Stony Brook's per capita faculty productivity to be among the highest in the nation, among public research universities second only to UC Berkeley and equal to UC Santa Barbara.

The data from that study place Stony Brook among the top 15 universities (private and public) in the country in terms of our graduate and research programs (see question # 5).

Stony Brook has the unique advantage of a single campus that encompasses Health Sciences, Arts and Sciences and Engineering. This has enabled us to develop a number of outstanding Ph.D. programs in Life and Basic Health Sciences. Doctoral programs that link either Arts and Sciences or Engineering with Health Science programs include Anthropological Sciences, Biomedical Engineering, Genetics, Molecular and Cellular Biology, Oral Biology, Applied Mathematics and Statistics, Computer Science, Social Welfare and Nursing. In conjunction with Stony Brook's Medical School, we operate a MD-Ph.D. program that has recently received an increased level of support from the Medical Science Training Program at the National Institute of Health. Since the last National Research Council study we have also developed a doctoral program in Biomedical Engineering that links the School of Medicine (Clinical as well as Basic Science), the College of Engineering and Applied Sciences and College of Arts & Sciences to provide extraordinary opportunities to students. Stony Brook's graduate programs also benefit through our proximity to and close interactions with Brookhaven National Laboratory and Cold Spring Harbor Laboratory. Stony Brook operates an inter-institutional doctoral program in Genetics with these two institutions. Many staff at Brookhaven National Laboratory and Cold Spring Harbor Laboratory hold adjunct appointments in our doctoral programs in Physics, Molecular Biology and Biochemistry, and Neurobiology and Behavior. The defining characteristics of the schools of the Health Sciences Center are quality and clinical relevance as well as scholarship and basic research. Stony Brook ranks in the top 40% of institutions in terms of National Institute of Health grants awarded although its faculty is small. When measured per capita, the basic science faculty of the School of Medicine rank in the top 10% nationally and the clinical faculty ranks in the top 30%. Faculty who are experts in their clinical specialties, well known in their fields, student oriented, and culturally diverse, staffs the School of Medicine.

The University Hospital is the educational resource for the over 2300 students enrolled in the school of the Health Sciences Center and provides training for more than 500 residents in 43 approved specialty programs (including subspecialties) and the general practice/dental medicine program. In 1996, University Hospital at Stony Brook was named one of the Best 15 Major Teaching Hospitals, and 100 Best Hospitals overall, in the United States.

In recent years Long Island's industrial base has shifted dramatically from defense to a range of technology-intensive industries such as electronics, software, biotechnology, imaging and precision manufacturing. We work increasingly with industry to develop graduate certificate programs and master's degrees to provide the highly educated and skilled workers and managers that these industries require.

Overall, the defining qualities are excellent research and scholarship in our graduate programs, and training in professional programs conducted by professionals attracted to Stony Brook by the array of high quality programs and a state-of-the-art health care

facility. We set the most demanding standards for ourselves and raise the bar whenever we seem to be close to achieving our goals. We believe that New York should have an institution that is regarded in the same light as the best public research universities of California, Michigan, Texas, or Wisconsin. We've taken great strides towards this status and feel confident that we have the intellectual capabilities to accomplish this goal.

**20. In your leading graduate and professional programs, what institutions do you compete against for faculty, students, and sponsored research funds?**

In our leading programs, we compete with the best private and public schools for students, faculty and research funds. Nominees for University graduate fellowships are often juggling similar offers from Berkeley, Chicago, Duke, Harvard, Johns Hopkins, Michigan, MIT, Stanford, and Wisconsin at Madison. Stony Brook does well in these competitions. We lose some students because of the more established reputation of some of our competitors, and many due to the less than competitive support packages that we can offer to the best and the brightest.

Some of the world's top schools try to recruit our faculty. Recent successful raiders include UC Berkeley, Cornell, Delaware, Frankfurt, Georgia, Heidelberg, Iowa, Kiel, Konstanz, University of Massachusetts, Ohio State, UC San Diego, University of Washington, and Yale. On the other hand, Stony Brook has recently retained faculty against offers from Harvard, Iowa State, the Max Planck Institute-Leipzig, the Naval War College, Rice, Trinity College-Cambridge, UC San Diego, and Wisconsin. In the past year, we have recruited faculty from Harvard, University of Southern California, and Yale.

We compete successfully for peer-reviewed research funding at the highest level; we were the first New York State public university to gain Carnegie Research I status.

**21. How would your proposed M.B.A. in Technology Management reflect and support distinctive elements of your campus' mission?**

The curriculum of the proposed MBA is one for the information age. It is a forward looking program that recognizes the 21st century will require business administrators to possess a very different set of skills than has been the case for the past thirty years. Top corporations will require executives who are technologically sophisticated and who have excellent communication skills. The MBA draws extensively on expertise in Operations Research (in Applied Math), Management (W. Averell Harriman School for Management and Policy, Technology and Society), Information Systems (Computer Science, Health Science Informatics), Communication Skills (Composition and Oral Communication and Languages), Technological Systems, Health Technology and Management as well as the more traditional supporting disciplines in Economics, Math, Sociology, Psychology and Political Science. A recent site visit on the proposal emphasized the significance of the scientific and technical infrastructure at Stony Brook to support this program and pointed out that Stony Brook is the only institution in the downstate metropolitan area that has the



capability to deliver an MBA in Technology Management. The reviewers suggested that each student should have three mentors: One for business and academics, a second from Engineering and a third from Industry. The combination of our science, technology, and clinical base, our two incubators (for high technology, and for software), the existing campus/industry interactions through State Partnership for Industrial Research, and our two New York State Centers for Advanced Technology (on Biotechnology, and on Microsensors) provide tremendous opportunities for internships and exposure to active entrepreneurs.

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## Research

### **22. What are your priorities for promoting increased activity and distinction in research?**

Stony Brook is a Carnegie Research I institution. This ranking places it among the most prestigious research universities in the country. We have a National Science Foundation Science and Technology Center, *two* National Science Foundation Materials Research Science and Engineering Centers (the only other university with two is Stanford), and are presently in the final national competition for two more Science and Technology Centers. The successes in peer-reviewed research competitions come from the priority that SUNY has given to the research mission at Stony Brook and from the creativity of our highly talented and hard-working faculty supported by the Stony Brook administration. Research excellence continues to be a first priority mission of Stony Brook and provides an environment in which the research and scholarly activities of faculty and students flourish.

Our external research funding volume is more than 25% of the entire SUNY volume. The *Five-year Plan 1995-2000* sets a target of at least 5% per year growth in research expenditures. This is realistic; the most recent doubling time is about ten years. The SUNY Graduate Research Initiative was a critical component in building this record of success.

To realize continuing growth objectives we have:

- supportive administrative structures for sponsored programs administration
- creative approaches for backing multi-disciplinary research initiatives
- provision of resources needed to attract and retain excellent faculty including a number of state-of-the-art facilities, equipment, and shops and services facilities
- a royalty system which encourages invention and a Technology Transfer Office that encourages investigators to bring their inventions to the marketplace

New research activities are supported which have the potential to impact on emerging fields, and on potential leveraging opportunities both with Stony Brook's existing faculty and resources and with external partners such as Brookhaven National Laboratory, Cold Spring Harbor Laboratory, and industry. The new Centers for Molecular Medicine that will play an important part in promoting increased activity and distinction in research is a good example of this strategy. The Centers will include the following: Institute for Structural Biology; Cancer Center; Institute for Cancer Genetics; Institute of Infectious Disease; and the Institute for Cell and Developmental Biology. (The new Centers for Molecular Medicine building will also house Biology teaching laboratories.)

New initiatives in the microelectronics area will play an important part in enhancing the development of the microelectronics industry in the State. Two examples are: the recent award of a new Center for Advanced Technology in the field of Emerging Electronics, Sensors and Diagnostic Tools at Stony Brook which includes collaborative partnership with SUNY at Albany; the recent establishment by the Semiconductor Industry Association of a Focus Center in Interconnects at SUNY Albany and Rensselaer Polytechnic Institute with a collaborative partnership with SUNY Stony Brook and Cornell. These initiatives have helped establish the State in general and SUNY in particular as the front runner in the microelectronics field.

In areas where sources of external research support are not widely available, for example the Humanities and Fine Arts, the university administration encourages scholarly and creative activity through paid sabbaticals and one semester research leaves for junior tenure-track faculty. Recently, there has been a new emphasis by the administration on providing stronger support for proposals in these disciplines. As a result, two National Endowment for the Humanities planning grants for study of new programs in Asian Studies and in American Studies were obtained this year.

**23. What internal mechanisms does your institution have to support such research priorities? How do you assist faculty in securing external support for such research?**

The following support research priorities at Stony Brook:

- Administrative commitment to building programs of research excellence;
- Fiscal support via formulaic investment in units that generate external research support. This is a generous formula that reserves 25% of the value of the Indirect Costs generated for research development by departments, deans, the Provost and the Vice President for Research. All units are encouraged to leverage these funds so that they generate additional sponsored program support. In addition, the VP for Research is allocated about 6% of the value of the campus Indirect Costs to provide matching funds for grant applications and for facilities development;
- A capital expenditure program that recognized the importance of research facilities;

- An organized inter-campus competitive process for investing the Graduate Research Initiative and campus research development monies in encouraging research growth;
- A Technology Transfer Office that identifies, patent protects, manages and markets Stony Brook intellectual properties.

Faculty is assisted in obtaining external support for their research programs by the following:

- An Office of Research Resources that identifies opportunities for funding; a monthly bulletin as well as individualized compilations of funding sources are distributed to the campus
- A comprehensive Research Informatics Web site
- A full-service Office of the Vice President for Research for submission of applications, negotiation of contracts, supporting Federally required compliance requirements, responding to audits, providing fiscal reports, approving and initiating personnel transactions and other services
- A menu of educational programs designed to inform faculty, staff and students of opportunities, regulations, technology transfer issues, and other matters pertaining to sponsored programs
- An Office of Economic Development that pairs local industry sponsors with researchers at Stony Brook, an activity that benefits the regional economy as well as the research endeavor.

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## Specialized Mission Components

### **24. Other than broadly based, "traditional" undergraduate instruction and research, what specialized mission-focused components does your institution have?**

We fulfill our education mission by serving the needs of the downstate metropolitan region for affordable, high quality education in a research setting. In addition to traditional undergraduate education, Stony Brook has many specialized education or outreach initiatives designed to attract and retain undergraduate students, especially underrepresented groups, to science, mathematics, engineering, and medicine. Some examples:

#### Undergraduate Initiatives

- Undergraduate Research and Creative Activities program
- National Science Foundation Recognition Award for the Integration of Research and Education
- Women in Science and Engineering project supported by National Science Foundation

- Howard Hughes Medical Institute programs for Undergraduates which is supported by the Howard Hughes Medical Institute Program for Undergraduates
- Partnership for Recruitment and Innovation in Minority Education
- SUNY Alliance for Minority Participation which is National Science Foundation supported and led by Stony Brook

#### Outreach (K-12)

- Biotechnology Teaching Lab which hosts 2,800 high school students per year
- Talent Search Orientation for Westinghouse Science Competition; in recent years, about 10% of national Westinghouse semifinalists do their research at Stony Brook (this year one out of eight)
- Museum of Long Island Natural Sciences
- Women in Science and Engineering K-12 program, which is public school supported
- Science and Technology Entry Program; College Science and Technology Entry Program

#### Outreach (two-year colleges)

- Biology Participation in Research and Education Program (National Institute of Health supported collaboration with community colleges for minority students in science).
- Long Island Group about Science Education, a National Institute of Health supported consortium led by Stony Brook, community colleges, high schools, and industry.
- Long Island Consortium for Interconnected Learning in Quantitative Disciplines. National Science Foundation supported, Stony Brook led group of ten colleges and universities.

For teacher education and research on teaching methodologies there are:

#### Pedagogy

- Center for Excellence & Innovation in Education
- Center for Science, Mathematics and Technology Education
- Center for Excellence in Learning and Teaching

Stony Brook has many organized research and/or educational centers. These areas of exceptional research capability complement or act as stimuli for the broader portfolio of University research activities and, in certain cases, as regional resources of expertise. Some of our major centers are listed here:

### Physical Sciences and Engineering

- Institute for Mathematical Sciences
- Institute for Theoretical Physics
- Radiation Laboratory
- Center for High Pressure Research (National Science Foundation Science and Technology Center)
- Center for Polymers at Engineered Interfaces (National Science Foundation Materials Research Science and Engineering Center)
- Center for Thermal Spray Research (National Science Foundation Materials Research Science and Engineering Center )
- DARPA/AFOSR Consortium for Crystal Growth Research
- 3-D Visualization Center

### Medical and Life Sciences

- Lyme Disease Center
- Cardiac Center of Excellence
- Institute for Mental Health Research
- Institute for Cell & Developmental Biology
- Centers for Molecular Medicine (new)
- Cancer Center
- Cell and Developmental Biology
- Institute of Infectious Disease
- Cancer Genetics
- Structural Biology
- Ambulatory Care Center
- Laboratory for Brain Research (funded by Howard Hughes Medical Institute)

### Humanities

- Humanities Institute
- Pollack-Krasner House and Study Center
- Center for Italian Studies

### Social and Behavioral Sciences

- Institute for Long Island Archaeology

### Environment

- Marine Sciences Research Center (sole SUNY designated marine studies center)
- Living Marine Resources Institute
- Institute for Terrestrial & Planetary Atmospheres

- Institute for Conservation of Tropical Environments

#### Regional policy centers

- Waste Management Institute
- Groundwater Institute
- Center for Regional Policy Studies

#### New York State Centers for Advanced Technology

- Center for Biotechnology
- Emerging Electronics, Materials and Photonic Technologies for Diagnostic Tools and Sensory Systems

### **25. What special needs or requirements do these components impose?**

The list in question #24 suggests our diverse and complex array of activities. Many of our research and professional/graduate education mission components are among the most expensive areas of scholarship. This is especially true for the health sciences where costs per students are particularly high, but it is also true for doctoral education in general, especially in the sciences. Good doctoral training occurs only when small numbers of students work closely with faculty. The full time equivalent workload for such students appears very small, but few would argue that it is possible to advise more than several doctoral students at a time effectively. Much of the research and graduate education mission is also equipment intensive and places time constraints on other faculty areas of responsibility. For example, marine scientists may need to schedule cruises at times dictated by factors such as climate or availability of ships. Scientists often do research at specialized facilities such as the high energy physics Tevatron accelerator at Fermi Lab requiring travel and scheduling of facility time in competition with other users. Stony Brook itself houses extraordinary research facilities and equipment; one example among many is the superconducting linear accelerator in the Nuclear Structure Laboratory. While most of the costs of such facilities are borne as indirect costs by funding agencies, the maintenance and utilities cost of competitive, complex research facilities often places added demands on State resources.

Professional education programs, whether at the undergraduate or graduate level, usually require specialized laboratory and classroom facilities both for instruction and research and for student practice, review, and study. In the Health Sciences Center, such programs require clinical/didactic instruction, faculty and student effort, and staff (technical, administrative and clerical) support throughout the year. Faculty, in order to remain in close touch with healthcare as it is practiced, needs to be given time and encouragement to maintain clinical practice as part of their working lives. In order that programs retain high academic standards and aspire to scholarly excellence, faculty must be encouraged to do research. While the University hospital is a valuable resource for all clinical programs, the practicum component of curricula, often done at off-campus sites, requires considerable expenditure of faculty resources.

**26. Are there distinctive ways in which institutional and faculty service to the local community, region and State are linked to and supportive of your campus mission?**

A recent analysis shows that total University revenues are leveraged by more than 3:1 compared to State support. Even more important, our technology and science base is an essential resource for the region. Some examples: the State Partnership for Industrial Resurgence program where the resources of College of Engineering and Applied Sciences have effected a return on State investment of more than 20:1; the Biotechnology CAT, the Long Island High Technology Incubator, the Stony Brook Software Incubator, and the New York State Small Business Development Center, all of which nurture embryonic companies; the Center for Regional Policy Studies, Waste Management Institute, and Groundwater Institute are all resource centers for regional planners and regulators; our management of Brookhaven National Laboratory which itself is an extremely important resource for the region and State. We consider that Stony Brook is the lynchpin of economic development on Long Island.

In addition to a wide range of tertiary and primary care services, University Hospital offers several unique and specialized programs. Stony Brook University Hospital boasts Suffolk County's only Neonatal Intensive Care Unit that provides specialized care for premature and new born infants in Suffolk County, and obstetrical services which include antepartum care and a perinatal outreach program. University Hospital is Long Island's sole Level One Trauma Center, and serves as the regional center for open-heart surgery, kidney transplantation, burn care, high-risk obstetrics, and the care of persons with AIDS and HIV infection. Stony Brook also houses a specialized breast-care center, a cancer center, and the Cystic Fibrosis Center of Suffolk County. It offers an epilepsy management program and an internationally recognized center for the diagnosis and treatment of Lyme disease.

The School of Health Technology Management, and Nursing faculty and students are involved in a variety of community health plans and educational programs. For example, since the early 1980's, the School of Health Technology Management has been funded to offer the community an AIDS Education Resource Center. In addition, the School of Social Welfare faculty and students are involved with virtually the entire range of health, mental health and social welfare services on Long Island with emphasis on under-served populations. The University Hospital offers state-of-the-art health care for the region, and provides care for the un- or under-insured.

The School of Dental Medicine offers a fellowship program to train dental fellows in the management and provision of dental care to the developmentally disabled. The program includes seminars, lectures, and extensive clinical experiences at the School of Dental Medicine and University Hospital with emphasis on various patient management techniques needed to provide comprehensive dental care to the disabled population.

Our education outreach programs make Stony Brook the Long Island resource center for K-12 students, community college students, and their faculty. The Outreach and

Pedagogy categories in question #24 list these activities. Through our School of Professional Development, we provide a variety of graduate and advanced certificate programs to individuals in the business and industrial sector.

The Staller Center for the Arts is the major comprehensive center for the arts on Long Island. Performances and exhibits of world class professional artists are successfully integrated with academic department offerings in a spectrum of music, dance, theater, film, special attractions, lectures and exhibits. The Center offers over 400 events a year attracting over 250,000 campus and community residents.

The move to Division I athletics will play a major role in Stony Brook's "town/gown" relationship. The presence of premier athletic teams in all sports from top rated universities will attract the local community to join with the campus community in support of the home team. Local (Hofstra and St. John's) as well as intrastate (Buffalo, Albany, and Binghamton) rivalries will add excitement and a sense of pride that can not be achieved at the Division II and III level.

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## **Academic Standards**

### **27. How do you assess the quality of your academic programs?**

Stony Brook's system of peer review encourages academic excellence and high quality education. This review is independent of accreditation, registration or other external certification processes and is designed to assess department or program quality, and to assist the University administration in planning, in setting institutional priorities, and in allocating resources. Each department or program is reviewed at approximately five-year intervals at the Provost's initiative. The Academic Review Committee, composed of the Provost, representatives from the Provost's Office, the Deans of the Colleges, the Dean of the Graduate School, the Vice President for Research, and a representative of the University Senate Committee on Academic Planning and Resource Allocation, develops the schedule for reviews. The review is composed of three parts: (a) preparation of a self-study by the department or program; (2) site visit by a panel of external reviewers and submission of their report; (3) the institutional response to the visit and review.

Accreditations are done by the Middle States Association and for the College of Engineering and Applied Sciences by the Accrediting Board for Engineering and Technology. In the Health Sciences Center, faculties of Nursing, the School of Social Welfare and the School of Health Technology Management review their respective curricula on an annual basis as well as the performance of graduates on licensing exams. All separate programs in health sciences are reviewed and accredited by their respective professional accrediting body on a systematic basis.



**28. In addition to assigning grades for coursework, how do you currently assess student learning on your campus? Are there methods that you are not now using that you would like to use?**

About 40% of Stony Brook's undergraduate students are engaged in direct research or scholarship with faculty. As a part of doing research with faculty, students receive individual assessment of their intellectual contributions, perhaps the best mode of learning possible. The new Freshman Learning Communities program (see answer to question 13) that is funded by a Hewlett Foundation grant has a rigorous extensive assessment component that is designed to determine whether this approach to teaching core curriculum courses is effective. This collaborative learning program and its assessment protocol may well provide a means of extending our traditional process for student evaluation by providing us with information about the value added by a particular approach to undergraduate teaching. Indeed our new Center for Excellence in Learning and Teaching will also contribute to the development of new and more rigorous means of determining what our students are learning and what are the most effective modes of instruction.

The development at the undergraduate level of a capstone program, recommended in the Boyer Commission report and a priority in both the *Academic Plan* and the *Five Year Plan 1995-2000*, will provide a useful tool for formative and summative evaluations of learning in the major and, to some extent, of general education.

Student learning is assessed in the professional schools (Health Sciences, Engineering) by regular and rigorous review by national accrediting bodies, which maintain comparative databases of the results of evaluation tools used. Competency based assessments are used to ensure student performance levels prior to graduation so that appropriate remediation can occur if necessary. Students in all programs in the Health Sciences Center are assessed through standard National Examinations. Students must pass national standardized examinations in order to be licensed to practice their profession. Professional schools are beginning to use longitudinal assessment of graduate professional performance as a measure of program quality.

**29. What steps would you like to take to maintain or raise academic standards?**

In the professional and graduate schools, academic standards are consistently very high. Students who matriculate into these programs must have graduated at the highest levels of their undergraduate institutions. As described above in question #10, our enrollment plan calls not only for increasing the size but also the admission standards for our student body.

It should be emphasized that we already have many students who achieve the very highest standards of academic achievement as measured by their success in being admitted to the most selective post-baccalaureate programs of study, by successes in obtaining prestigious national fellowships, such as the Goldwater, or by finding excellent

employment directly upon graduation. Our enrollment plan objective is to improve the match between the opportunities available here and the academic preparation of *all* our students.

We are currently putting in place methods that will allow us to identify early on students who are at risk academically, so that we can help them to raise their level of academic achievement. Concurrently, for students who do not respond to assistance, we will strictly enforce our existing academic standards.

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## **Intercampus Collaboration**

### **30. How do your campus' academic programs complement those offered by other SUNY campuses?**

Stony Brook offers many programs that are duplicated elsewhere in the state as befits our role as the major SUNY institution in the downstate region. We do not offer Law, Optometry, Pharmacy, or Education (for primary school teacher certification), which are available elsewhere. Most of our doctoral programs are the best available in SUNY and thus provide an excellent complement to baccalaureate and master's programs elsewhere in the system. The majority of doctoral programs that we offer that are also offered at the other three centers, at Environmental Science and Forestry, or the health science centers. In most of these instances, Stony Brook has the top ranked program. We offer a range of programs not available elsewhere in the system that take advantage of the conjunction of our Health Science Center, the College of Engineering and Applied Science, the College of Arts and Sciences and SUNY's sole Marine Science Research Center. We believe that SUNY, as a whole, offers more doctoral programs in the same discipline than are needed, and that the overall consequence has been to offer programs that are rated mediocre on the national scale. If the system were being designed anew, it might make sense to emphasize disciplinary strength at the various university centers. As history has unfolded, the programs of the highest quality in virtually all disciplinary areas have developed at Stony Brook. Thus, it is difficult to see how significant complementarity, as opposed to competition, among the centers can be accomplished without lowering the quality of the best programs. The educational needs of the state would be better served by identifying one, or more, SUNY campuses that would be charged with, and supported towards, becoming nationally and internationally renowned in graduate, research, and professional activities. These flagship campuses would then complement other institutions in the system in the way that the UC campuses complement the California State University campuses.

In the Health Sciences Center, the School of Health Technology Management and Nursing cooperate with associate degree programs to promote student transfer through such mechanisms as transfer agreements and curricular guidelines. The Undergraduate

Program at the School of Social Welfare complements the Community Service program, the Drug and Alcohol Program and the Criminal Justice Program at Suffolk Community College and their graduates are encouraged to apply to our program. Our Graduate Program complements the Human Services Program at Empire State College. In addition, students in the undergraduate programs in Sociology, Political Science, Women's Studies, Psychology, Criminal Justice, Africana Studies, or health-related fields at Old Westbury, Farmingdale, Empire State College, Nassau and Suffolk Community Colleges who are looking for a professional and practice oriented career frequently come to the School of Social Welfare.

### **31. What new collaborative activities do you plan over the next five years?**

The Strategic Partnership for Industrial Resurgence program has been the most successful collaboration with other SUNY campuses, in particular at Albany, Buffalo, Binghamton, and New Paltz. We hope to expand this program with additional assistance from SUNY and the Legislature, as it is one of the most direct means that SUNY has to demonstrate its importance to the process of economic development in New York.

The School of Social Welfare is discussing a collaborative relationship with the International Education Resource Center for Research and Study Abroad Program in New York. The International Education Resource Center is an overseas program development facility that serves as a liaison between institutions of higher education in the United States and businesses and international agencies and organizations in the Dominican Republic. Its aim is to help U.S. colleges and Universities better prepare their students to become more globally competitive. This initiative is an opportunity to work in concert with other baccalaureate programs within the SUNY system to develop a Research/Study Abroad/Exchange program.

As part of the Family Violence Initiative, the School of Social Welfare, in collaboration with the Department of Psychology, is in the process of submitting a joint grant proposal to the Centers for Disease Control to create a national center for the prevention and policy analysis of partner abuse, rape and sexual assault. This center would identify and link researchers, policy and program evaluators throughout the county. A minimum of 25% of the professionals trained would be members of minority ethnic and racial groups.

The faculties and administrators of (Touro Law Center, School of Social Welfare, Health Sciences Center, and Stony Brook) have approved plans for a dual degree program of law and social work (MSW/JD).

### **Regional Inter-institutional Plans**

Stony Brook, Farmingdale and Old Westbury have been discussing a number of joint initiatives that would take advantage of our different missions and histories to serve the people of Long Island. The Provosts of these institutions have agreed to meet on a regular basis to facilitate cooperation and to develop new collaborative ventures. We intend to

combine the resources of each of our three institutions to better serve the educational and business needs of the Long Island community and New York. These efforts will involve inter-institutional academic programs, academic support services, joint business contracts and residence life development.

Farmingdale and Stony Brook currently have a program that guarantees the transfer of students in Farmingdale's Mathematics program into the Applied Mathematics department at Stony Brook where students can complete a BS degree and obtain an MS in a single additional year of study. We have discussed extending this program to induce minority students to complete a doctoral degree in mathematics at Stony Brook with the guarantee of a faculty position at Farmingdale upon completion of their Ph.D. Stony Brook and Old Westbury have begun discussions that we hope will lead to a larger number of Old Westbury graduates enrolling in graduate programs at Stony Brook.

Stony Brook has recently created a Center for Excellence in Learning and Teaching that will help faculty, graduate students and undergraduates to become better learners and teachers. This center will also help faculty at Farmingdale, Old Westbury and Stony Brook to develop internet courses for all of our students and to enhance the use of information technology in the teaching of courses on our campuses. It is our intention to position that will jointly report to Center for Excellence in Learning and Teaching and their home campuses.

Stony Brook also will continue its efforts jointly with Old Westbury and Farmingdale on the Long Island Consortium for interconnected Learning – an ongoing National Science Foundation-sponsored program involving 10 institutions on Long Island, (including all Long Island SUNYs) that seeks to improve the mode of instruction in the quantitative disciplines. The National Science Foundation -sponsored Consortium is disseminating project results SUNY-wide as well as regionally and nationally. Stony Brook will continue its leadership of the Alliance for Minority Participation – a National Science Foundation sponsored program designed to increase minority representation in science by providing academic services and financial assistance to students pursuing studies in these areas.

Other areas in which our three institutions plan to develop cooperative ventures are: international business education; international conferences; support for computer networks and software licenses; teacher education; and campus wide services such as bookstores, food, and dormitories.

### **32. How are you working with other campuses to take advantage of distance learning technologies?**

Stony Brook has several distance learning initiatives underway, some of which involve close cooperation with other SUNY campuses or agencies. Stony Brook's College of Engineering and Applied Sciences is a partner in "EngiNet" along with Buffalo, Binghamton, New Paltz, and the Cornell School of Forestry. This program offers a coordinated approach to engineering distance education across the State of New York

(<http://d011.eng.sunysb.edu/enginet/>). Stony Brook is also becoming active in the SUNY Learning Network (<http://sln.suny.edu>). In the fall of 1998, Stony Brook plans to offer four courses over the SUNY Learning Network in information technology, sociology, comparative literature, and library science at either the undergraduate or graduate level. Other areas of distance learning are the Neonatal and Family Nursing and Nurse-Midwifery degree programs offered by the Health Sciences Center (<http://www.uhmc.sunysb.edu/nursing/distprog.html>), and more than a dozen distance learning courses offered through the "Electronic Extension Program" of the School of Professional Development (<http://www.sunysb.edu/spd/ELECTRIC.htm>). Stony Brook was also a very active participant in the SUNY Distance Learning Panel that prepared a policy level report on important issues of distance learning programs in the SUNY system.

While a few Stony Brook courses and programs are specifically directed at distance learning, a large, and rapidly increasing, number of our academic programs are using the facilities of the World Wide Web for distribution of course material, syllabi, lab assignments, exam answers, and much other course information. A wealth of examples can be found at the Student Instructional Computing site, at <http://www.sinc.sunysb.edu>. For various reasons, courses exclusively dependent upon the Web are much rarer. The vast majority of undergraduate courses must rely on textbooks for most reading content and most courses need and benefit from the one-on-one interaction between student and instructor. However, one example of a course that is increasingly Web-based is the School of Medicine's course in Medicine in Contemporary Society. It can be found at <http://www.uhmc.sunysb.edu/prevmed/mns/>.

Another School of Medicine development on the web is the Blood Organ System (2nd year medical school) which will incorporate not only almost all required readings and syllabus material, but also several hundred megabytes of digitized blood microscope slides. Such courses, while for the moment designed for local use, obviously put Stony Brook well on the way to being able to offer learning at a distance in a large number of areas.

Farmingdale and Stony Brook have made a proposal to SUNY to assist in the funding of a two-way video facility at Farmingdale that will allow these institutions to share some courses and seminars without having to travel to each other's campuses. We intend to use this facility to deliver courses originating in the College of Engineering and Applied Sciences at Stony Brook to serve an increasing number of mature students who work in Nassau and western Suffolk counties.

### **33. How are you working with other campuses to share library resources and information services?**

Stony Brook has been an active participant and leader in cooperative library programs among SUNY institutions and proposes to become the hub of a virtual library for SUNY. Stony Brook has participated in Empire Express, a program in priority document delivery services among SUNY Libraries, and in the Open Access program which allows any

SUNY student or faculty member to use and freely borrow library material from Stony Brook's research library. Stony Brook has taken the lead in planning and advocating for the SUNY Virtual Library, a program that will create a state-of-the-art electronic library service for all SUNY students and faculty. The position paper "Creating the SUNY Virtual Library" that initiated the project was prepared at Stony Brook, and presented at the SUNY Chief Academic Officers Association meeting in Saratoga Springs in June 1998. For more information on the SUNY Virtual Library, go to <http://olis.sysadm.suny.edu/projects/virtlib/sunyover.htm> .

**34. If other State University units were willing, in what collaborative efforts would you like to engage with them?**

The graduate deans at a number of SUNY campuses have discussed possibilities for shared teaching of specialty graduate classes and this is something worthy of further discussion. Some advanced doctoral courses have to be taught, but have small enrollments and could profitably be shared among institutions offering the same disciplines. We have also considered ways in which the system might try to mount one very strong doctoral program, rather than four mediocre ones (e.g., in Economics). Ideas for consideration include having the strongest campus as the gatekeeper and offering the core doctoral curriculum with faculty from the other centers as full members of the graduate faculty with whom students could elect to conduct their dissertation research. Steps would need to be taken to facilitate faculty visits (perhaps for a semester at a time) to the gatekeeper campus to offer courses in their specialty area and to give them a chance to meet with and to recruit students. It is not clear what will, or even should, come of these discussions but it seems important to try to take advantage of the combined assets of the system to raise the quality of educational opportunities. This process is not necessary where all programs are already highly regarded.

We plan to continue discussions concerning development of the SUNY Virtual Library, and clearly need to continue to work as a consortium to purchase access to electronic information.

We also believe that there are opportunities for economies in the administrative areas of purchasing, food services, dormitories, software licensing, administrative computing, computer hardware, technology transfer, travel, student services and others. We have begun discussions with our close neighbors, Old Westbury and Farmingdale about these possibilities but would be willing to extend these discussions much more broadly.

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## General

### **35. How do you propose to measure success in achieving your mission?**

There are many measures corresponding to our multifaceted mission.

**Academics:** We monitor reputation results including: regular surveys as done by the National Research Council and, to a lesser extent, those done by periodicals such as US News; *ad hoc* reports such as the 1997 Graham Diamond study. We also use measures complementary to reputation surveys in between National Research Council cycles, and for programs considerably smaller than national norms. These include numbers of publications, numbers of prestigious awards, citation impact, publications per faculty, and research support per faculty. Our own external program reviews, and accreditation results such as from Middle States and Accrediting Board for Engineering and Technology, are essential. Ultimately, our educational productivity is gauged by numbers of applications, the quality of students who enroll, retention rates, years to graduation, and post-graduation outcomes.

In several disciplinary areas Stony Brook has developed assessment methods that have become models in those discipline. For example, our Writing Program employs a method of portfolio assessment that has been widely emulated. Similarly, our Chemistry Department has developed a computer-based system of student self-assessment that has proved highly effective in improving student learning. This year we are attempting to deploy this model in several other disciplines, including philosophy, economics, and mathematics. Finally, all curriculum development at Stony Brook is tied to a program of assessment. For example, the institution of the new freshman learning communities involves a carefully prepared assessment plan for evaluating not only the success of the students but of the program itself.

**Research:** Because research and academic excellence are fundamentally connected, many of the criteria listed above also apply here. Research-specific additional criteria include growth in external research funding and in numbers of disclosures and patents. We will also look for still more success in attracting highly competitive research awards such as for National Science Foundations Science and Technology Centers or Materials Research Science and Engineering Centers, National Institute of Health multidisciplinary training grants, and Howard Hughes Medical Institute Medical Investigator Awards.

**Health care:** We use criteria that include numbers of patients served, ratings by professional and regulatory agencies, and the business status of the hospital.

**Economic impact and industrial outreach:** Our measures include numbers of partnerships with industry and public agencies, and numbers of successful business startups or expansions brought about through State Partnership for

Industrial Resurgence, the Centers for Advanced Technology, incubators and internships.

***Educational and cultural outreach:*** We have a number of successful outreach programs and events for the community. Numbers of programs and participants and the ability of programs to attract agency or government support are measures of success.

### **36. What would you identify as your campus' greatest vulnerabilities?**

Stony Brook's major strengths and its major goals also contribute substantially to a special vulnerability. As we continue to build our reputation, maintenance of adequate funding from the State will be critical. Education at a first-class research university is expensive compared with that at other colleges and the less-research-intensive centers of SUNY. Our educational mission, however, is different, almost unique within SUNY. Stony Brook is a nationally recognized leader in the integration of education and research, and funding issues are especially important because of this commitment to build on the unique strengths of a research university in enhancing undergraduate learning. Although the investment is large, there is a very high payoff in giving our graduates the very best skills in a wide spectrum of important fields and in contributing directly to the growth and development of the region. Stony Brook is a notable outlier in the SUNY system in many respects. A high proportion of our graduate and professional programs are nationally recognized as top quality, but while this is reflected in the excellent quality of our programs, it also bears directly on faculty salaries. Moreover, many of our programs are concentrated in the relatively costly fields of science and engineering, where operations and facilities expenses are also high.

Compared to most other public research universities of the highest caliber, Stony Brook's cost-of-living adjusted instructional expenses per student are low. Our faculty salaries have fallen relative to other institutions. As an example, average salaries at three universities located roughly in the same area (the University of Connecticut, Rutgers, and Hofstra) are more than 8% higher than those at Stony Brook. The enrollment driven allocation component of the new Resource Allocation Methodology will help. However it is critical to Stony Brook's future as a national leader in research and learning that all the substantial extra costs of having a nationally recognized research university located in one of the most expensive-to-live-in areas of the country be recognized in the future allocation of resources.

Existing space for teaching and research is already insufficient in some areas with our present enrollment and research volume. Capital funds for new buildings and rehabilitation of existing buildings needs to be acknowledged and planned for. Stony Brook's location in an expensive suburban area, with little available off-campus housing, makes student housing a special problem. The problem will of course worsen as enrollments increase, particularly at the undergraduate level. It is essential that funds for added on-campus housing be soon identified. Lastly with respect to facilities, a significant liability is our lack of conference facilities. Prominent urban universities can



often host major national conferences in locally available facilities, but that is not an option for us.

A very different, but major, point of vulnerability for Stony Brook concerns the University Hospital, in particular in its fiscal relation to the academic programs of the University Medical Center and its public mission. This is addressed further below.

### **37. Are there any special conditions at your institution that hinder achievement of your mission?**

**Buildings and plant:** Stony Brook is unique in the SUNY system in the combination of its size and its having been built essentially *de novo* in the 1960s and 1970s. The power, steam, and chilled water systems require repair and, in some cases, replacement. The number of students, faculty, staff, and research enterprises is growing and we will soon exceed the capacity of some of our existing infrastructure. For example, with projected new buildings being constructed in the next several years we will exceed our chilled water distribution capacity. We have already had significant outages on some of our existing electrical distribution lines and part of the system needs to be replaced. For future growth, we will need to determine whether to expand the electrical, chilled water and steam distribution systems or construct buildings with self contained capabilities. The sewer system is also approaching its capacity. Repair, replacement and expansion will require a multi-million dollar investment. Other infrastructure problems include repairing the leaking concrete plaza decks on both the east and west campuses, and repairing roadway deterioration.

There is a problem associated with the implementation of the new Resource Allocation Methodology, in which operating funds for building operating costs and utilities are no longer allocated explicitly. This adversely impacts research intensive campuses like ours that have a number of research buildings that are expensive to operate and maintain. The Resource Allocation Methodology also has no mechanism to allow for the additional costs of operating and maintaining the new building required for our expanding research and education activity. A modified Resource Allocation Methodology might factor in explicitly the costs of operating new buildings, or perhaps more straightforwardly account for these costs increasing the Resource Allocation Methodology proportion of research expenditures allocated to campuses as support for research.

In this document, we have described plans for increasing many of our educational programs. Our research and economic development activities have been and will continue to grow strongly. There is a need for more space and for updating much existing space over much of the campus. An especially acute space problem exists in College of Engineering and Applied Sciences, which is planning a doubling of enrollments and is experiencing very rapid research expansion.

**Costs of living and business:** several of Stony Brook's extraordinary costs are addressed above (# 36). However, we must emphasize here once more that the costs of living in the Stony Brook region are the highest of all the SUNY unit locations. It is increasingly

difficult to afford to hire excellent faculty at all levels, and especially difficult to retain those at the top. Too many nationally and internationally recognized faculty have left Stony Brook for other institutions in part because they can have better living standards elsewhere. The data which were used by the working group which developed Resource Allocation Methodology put the cost of living here about 25% higher than upstate. It is crucial to Stony Brook's success that geographic differentials in costs fully reflect reality.

**University Hospital:** The hospital is successful by a variety of measures. Its graduate medical education programs are strong, socially responsible and improving, and provide a base for almost 2,300 undergraduate health science professional students. The Hospital serves as Suffolk County's specialty referral hospital providing unique and vital services such as organ transplantation, heart surgery and top level trauma and burn care. It also provides a wide range of essential services to the under insured and medically indigent population of Long Island. Hospital operations are successful by the usual measures of increasing numbers of patients and cost containment. However, it is locked into a paradox that provides great financial uncertainty. In the near past, state support has included fringe benefits to hospital employees. Within the past year, SUNY has found it necessary to retain hospital revenue equivalent to the value of these fringe benefits. However, the hospital must still fulfill its educational and public mission as well as deal with the multiple costs and lost opportunities (*e.g.* joint ventures with other health providers and health insurers) inherent in being with the SUNY system. Recently passed "flexibility" legislation has opened the possibility of some such ventures, but much remains to be done.

Thus, the paradox is that State support is currently uncertain, while the ability to enhance revenue in the manner of independent not-for-profit institutions is still largely lacking. SUNY must develop a solution to this problem. When the solution is crafted, it must be appreciated that the public and educational missions cannot be abandoned nor can obligations to labor be abrogated. Thus, for the near term of several years public support is critical whether or not the hospital becomes an entity independent of SUNY.

**38. What changes, if any, to SUNY System policies would help you to reach the goals you have set for your campus?**

Policy changes that more clearly recognize differences in campus missions, and the proportionately higher costs for units which maintain large and high quality programs in graduate or professional education and in research will help Stony Brook achieve its mission goals. For example, SUNY might adopt some aspects of the California public higher education system where research universities, schools of health sciences, four-year colleges, and community colleges, with their very different missions and support mix, have distinct administrative structures.

The current SUNY relationship to its University hospitals is not tenable. The hospitals provide considerable revenue for general SUNY use, but there is insufficient recognition of the costs of their educational programs or of their public missions. There is also little recognition of the additional costs of operating a hospital within the SUNY system. If the

hospitals remain in the SUNY System, the added costs must be recognized by ceasing to remove revenue from hospital earnings. If, instead, the hospitals are re-incorporated outside of SUNY, a mechanism will have to be devised to preserve their education and public service missions. A satisfactory resolution of the hospital operations issue, with the associated stable and smooth operations, will offer an improved learning environment for all the Health Sciences Center educational programs. The present destabilized hospital situation also threatens the clinical mission, both in educational interactions among basic and clinical scientists and in interdisciplinary health care delivery.

Recommendations for some specific SUNY System policy changes:

- Remove duplication in reviewing proposed new programs by both SUNY and the State Education Department. At least for the University Centers, with established records of quality graduate and professional degree programs, leaving proposal review solely to State Education Department could expedite the process of obtaining approval and hence improve flexibility in responding to opportunities for new, *e.g.*, interdisciplinary, programs. This would also streamline the approval process for dual degree programs (where one program is at another institution) where both are individually already accredited. SUNY's legitimate interest in monitoring overlap among campuses and changes in campus mission is adequately served through the letter of intent process.
- Institute fixed terms of approval for SUNY International Program agreements between individual SUNY campuses and foreign universities.
- Increase the limits on SUNY pay allowed to faculty interested in going from full to part time service while drawing support from personal retirement funds. Universities struggle with the challenge of maintaining a young faculty in these times when there is no fixed retirement age and where most budgets are tight. More creativity in crafting a revised SUNY policy would be very beneficial.
- Transition to campus-based application processing and fee collection. Eliminate the tithe on graduate application fees in which SUNY has no involvement.
- Continue efforts to transfer decision-making authority to campuses as described in *Rethinking SUNY*.

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## **APPENDIX**

- Copy of letter from Provost Salins and SUNY questions on Mission Review
- Table showing growth in undergraduate numbers – see campus demography
- Copies of the 5-year plan and the academic plan and other materials submitted on April 30, including Engineering 2000.