

Department of Mathematics
1996–2001 Strategic Planning Update Document
January 31, 1998

I. Executive Summary

Internal Strengths

- **Research:** The Department's research reputation is maturing to the level of the major national research universities. According to the most recent NSF/SRS *Survey of Scientific and Engineering Expenditures at Universities and Colleges, Fiscal Year 1995*, which ranks the top 100 institutions based on total and federally financed research and development expenditures in the Mathematical Sciences in fiscal years 1992–95, USC is ranked **seventh** for fiscal 1995, making us the **only** institution in the Southeast ranked in the top ten. Also, according to the most recent NRC reputation ratings of graduate programs and faculty (published in 1995 based on data collected in 1993), our Department was ranked **fourth nationally** in terms of its improvement, and **eleventh** in the Southeast in terms of the reputation of its faculty. We believe that were these rankings done in 1998 rather than 1993, our Department would be ranked in the top 10 in the Southeast.
- **Teaching:** The Department provides excellent innovative teaching and high quality computational facilities.
- **Service:** As illustrated by large external grant funding, the Department's interaction with and support of industry are very strong. Our engagement with the high schools in the state has grown through courses and workshops offered to in-service teachers, through our annual High School Mathematics Contest, and through courses being offered to gifted high school students.

Internal Weaknesses

- **Faculty Salaries:** At each rank the Department's mean faculty salary lags \$2,200–\$5,300 behind the corresponding mean mathematics faculty salary for its peer and aspirant institutions. In addition to the personal impact individual faculty members feel, this low salary level diminishes the University's state appropriation, and opens the Department to raids on its faculty.
- **Faculty Size:** We are five faculty positions short of where our 1990–95 Strategic Plan would put us. Since that plan was developed, the teaching responsibilities of the Department have expanded, and there are additional responsibilities on the horizon (depending on how the University responds to SACS requirements).
- **Physical Facilities:** The inadequate amount of space, often in miserable, depressing condition, provided for the Department impairs our fundamental missions in teaching and research.

Recommended Actions for 1998–99

- **Physical Facilities:** The whole of LeConte College, properly renovated, will make an excellent long-term home for the Departments of Mathematics and Statistics. With the completion of the renovations of McMaster and Flinn, the space in LeConte currently occupied by the Art Department, as well as the space temporarily occupied by Air Force ROTC should be transferred to the Departments of Mathematics and Statistics. At the same time, the various Academic Support Services temporarily housed in LeConte should be relocated on schedule and that space transferred to the Department of Mathematics. Concurrently, the University's Facilities Management Office should begin detailed consultations with the Departments of Mathematics and Statistics for the near-term renovation of LeConte.
- **Faculty Salaries:** The state's economy is in good shape. Before the national demographics opens the Department to serious raiding, a systematic plan to address this salary lag over the next three years should be developed and implemented by the Office of the Dean.
- **Faculty Size:** To achieve one of our principal strategic goals, the permanent faculty of the Department should be expanded by three positions over the next three years.

II. Assessment Report

Internal Strengths

Research

1. The Department has internationally recognized research mathematicians in analytical methods, computational methods, discrete methods, and in the foundations of mathematics. This level of recognition is reflected in the exceptional level of external funding the Department attracts, in the frequency with which faculty members are invited to address national and international conferences, and in the core of researchers with high national and international visibility sitting on editorial boards, organizing committees of international conferences, and national and international oversight panels.
2. Two key elements support the Department's research programs:
 - a. the Department's infrastructure, which includes excellent computational facilities, the in-house Mathematics Library, and highly capable support staff, and
 - b. the exceptional level of external funding from sources ranging from the National Science Foundation to the National Institutes of Health, to various DoD/DoE programs.

Educational Programs

1. The Ph.D. program has shown increasing success. In recent years, several students with promise of establishing strong research careers have completed their degrees. This program also continues its prominent role in providing new faculty members for the colleges and universities of the state and the region.
2. At the undergraduate level, the Department is actively implementing innovative technological and pedagogical methods in our lower division courses. The Department also plays a key role in SCAMP. The Math Lab offers effective assistance on a walk-in basis to lower division undergraduates.
3. The Department provides excellent computational facilities for its educational programs at the graduate and undergraduate level.

Service

1. The Department has an exceptional record of addressing research problems of importance to the state and nation. These include: large scale computation, image processing, analysis of fluid flow (Industrial Mathematics Initiative), groundwater modeling and analysis of contaminant transport (PICS/Savannah River Project), medical imagery and DoD related research (Image Processing Laboratory), and analysis of data on child abuse (in collaboration with the Department of Mental Health).
2. The Department sponsors a High School Mathematics Contest which brings roughly 300 of the most talented South Carolina high school students to the University every December.

Internal Weaknesses

1. The faculty of the Department is too small. This has several consequences. Key research areas do not have the critical mass to support collaborative research. The Department relies too heavily on part-time faculty and graduate teaching assistants to teach lower division courses. Class sizes in these courses are frequently so large that instructional effectiveness is impaired. The work load on the faculty generally is great enough to imperil the quality of the Department's programs in teaching and research.
2. The physical space provided for the Department is inadequate. The amount of office, laboratory, and classroom space available to the Department is insufficient to support even its current programs in education and research. The condition of LeConte is disreputable. The HVAC, electrical, plumbing, and alarm systems are, at best, unreliable. The condition of LeConte itself makes a statement about our Department that diminishes our ability to recruit the best new faculty and graduate students, embarrasses us with visiting colleagues, and depresses both faculty and students.
3. The compensation of our faculty, especially above the assistant professor level, is substantially below that of mathematics faculty at our peer and aspirant institutions.
4. The Department's funding used to compensate faculty for advancing our principal missions in teaching and research during the summer months has been diminished by more than 50% in the past several years. Since this funding was one of the keys to the rapid and nationally recognized improvements in our Ph.D. programs and our research profile since 1974, this funding cut can only weaken our ability to move into the rank of the top 50 institutions nationally.
5. The Department lacks a regular program supporting visiting faculty at the post-doctoral and the distinguished senior faculty level. Such programs, common among mathematics departments at AAU institutions, stimulate cutting edge research, and facilitate links to other leading institutions.
6. The Department lacks graduate fellowships. These are important tools in recruiting the most gifted graduate students.

External Opportunities

1. External funding will be large for research centered on areas of national need.
2. External funding will be large for efforts to make university-level instruction of mathematics more effective.
3. External funding will be large for efforts to make K-12 education, especially in science and mathematics, more effective. This will include funding for programs within the University and for collaborative ventures involving the University and the schools.
4. The upcoming reaffirmation of the University's accreditation will provide an opportunity to reassess the role of mathematics in the University's Core Curriculum.
5. The new method for determining the state appropriation for the University puts a premium on much higher admissions standards. This, together with increased availability of external funds, and the University's effort to become a member of the AAU, provide us with the opportunity to bring our undergraduate program to the same level of success as our graduate program.

6. The national unemployment rate among new Ph.D.'s in mathematics has been above 8% for the last several years. Thus, the job market at the moment favors the University. Our Department has the opportunity to hire outstanding new faculty members.
7. Employment opportunities in government, business, and industry for individuals with strong mathematical training (at every level) should increase.

External Threats

1. External funding for basic research and for "small science" is diminishing. A good part of the best mathematical research falls into this category.
2. The national unemployment rate among new Ph.D.'s in mathematics has been so high in the years just past that the pool of qualified applicants for graduate programs in mathematics nationwide has shrunk substantially. For our program, this means that for the next several years we could experience small enrollment levels in graduate courses crucial to a top quality program, and we could suffer a real shortfall in the number of graduate teaching assistants who ordinarily support our lower division instructional program. As larger numbers of faculty nationwide approach retirement, the unemployment rate will drop.
3. In the early 1960's there was a rapid increase, especially in mathematics, the sciences, and engineering, in higher education faculty nationwide. This large cadre is even now beginning to retire. Over the next five years we can anticipate a substantial nationwide shortage, particularly at the more senior levels. Our Department only began its period of rapid growth and change around 1970. As a consequence, our faculty—particularly those currently at the associate professor to early full professor stage—will become a target of raids by other institutions. Unfortunately, this emerging external threat is matched against one of our chronic internal weaknesses: a substantial salary lag above the assistant professor level in comparison to our peer institutions.
4. There is an increase in micro-management on the part of funding agencies, legislators, the public, the CHE, and even the University administration. Some of this springs from fallacious or anomalous perceptions of university-level teaching, of mathematical research, and of mathematics itself.

Internal Self-Assessment Plans

1. Overall program assessment has been made at regular intervals through a number of external review processes. These assessments include the decennial accreditation review by the Southern Association of Colleges and Schools (SACS), and other periodic reviews commissioned by the Dean of the College of Science and Mathematics and by the South Carolina Commission on Higher Education (CHE). As noted above a SACS review took place in 1990. The most recent Dean's review was commissioned in 1985 and conducted by an external national review panel chaired by Dr. J.J. Uhl of the University of Illinois. The Department was reviewed again in 1986–87 by a team empaneled by the CHE and chaired by Dr. Frank T. Birtel of Tulane University. Periodic external reviews by such national panels will continue to provide a valuable means of assessment in the future.
2. A number of procedures provide significant "quality control" in the mathematics degree programs. At the doctoral level, for example, between eight and ten faculty members assess each student's performance on written examinations; a panel consisting of at least five faculty members, one from outside the Department, assesses the dissertation itself. Ph.D. candidates also are required to demonstrate reading proficiency in French,

German, or Russian by reading and translating several pages of selected mathematical works. The merits of the translation are assessed by the Department of Foreign Languages and Literature.

3. All B.S. and B.A. students in mathematics are required to complete the calculus sequence and to satisfy breadth requirements in computer science and statistics. They are further required to complete core courses in discrete mathematics, differential equations, linear algebra, abstract algebra, and mathematical analysis. Beyond these requirements, all mathematics majors select a minimum of three more upper division mathematics courses according to their interests. Students seeking teacher certification in mathematics are encouraged by the Department to fulfill all of the requirements for a B.S. degree in mathematics and then to obtain an M.A.T. degree. The baccalaureate programs were extensively re-designed in 1982 in order to align them with standards proposed by the Committee on the Undergraduate Program in Mathematics (CUPM) of the Mathematical Association of America.

4. The Department's Graduate and Undergraduate Advisory Councils meet on a regular basis and are charged with monitoring national trends in mathematics curriculum development and implementing changes where appropriate. These advisory committees have been highly effective in tuning the Department's programs so as to accord with the CUPM recommendations, the state's Education Improvement Act, and the University's core curriculum mandates. Currently, several sections of "reform calculus" are being taught by the Department, and several faculty members are being provided support so that they can participate in national workshops and conferences related to the calculus reform movement and ways of incorporating computers into the heart of the mathematics curriculum. As a result, a number of instructors are now incorporating into other courses, such as Elementary Differential Equations MATH 242, the use of the program Maple as a learning tool. In addition, experimental small sections of Basic College Mathematics (designated MATH 111I) that meet 5 days a week rather than 3 are being offered, as the Department attempts to determine if such classes will improve the success rates in regular MATH 111 and subsequent mathematics courses. There is continuing interaction between the Department, through its Undergraduate and Graduate Advisory Councils, and the College of Science and Mathematics, the College of Business Administration, and the College of Engineering as to the suitability of mathematics courses used in their majors and to the level of mathematical preparation of students in those majors.

5. The Department uses classroom visits, College of Science and Mathematics Student Teaching Evaluations, and feedback from students to assess the quality of classroom instruction. The summary results of teaching evaluations and other indicators of the quality of teaching are reviewed several times each year by various tenured faculty committees, the Director of Graduate Studies, and other members of the Department administration. Periodically, the Department and College record the levels of stipends and the numbers of scholarships, fellowships, and assistantships. The data are compared with similar regional or national information published annually by the American Mathematical Society and other organizations.

6. The Department uses USC course enrollment studies to assess what enrollment changes have occurred in recent years. The latest studies show that the total number of students taught by the Department in each of the years 1992–93 through 1997–98 have been 7,408, 7,409, 7,069, 7,112, 6,750, and 7,651 and the total numbers of students taught in each of the 1992 through 1997 Fall semesters have been 3,798, 3,754, 3,661, 3,767, 3,473, and 4,052. Thus, the number of students taking mathematics courses each year at USC appears to have increased about 3% between the academic years 1992–93 and 1997–98, but *based on fall semester enrollments, the number of students taking mathematics courses at USC has increased about 7% between the 1992 Fall semester and the 1997 Fall semester. In fact, the 1997 Fall semester enrollment in mathematics*

courses exceeded the 1996 Fall semester enrollment in mathematics courses by almost 17%.

7. The universal standard of assessment is that all aspects of the Department's programs should be nationally competitive.

III. Progress Report on Strategic Goals

We report here on the progress towards achieving the goals set forth in the Strategic Plan for 1996–2001.

Goal 1: Upgrading mean faculty salary at each rank to corresponding mean salary for Group II universities.

At each of the ranks, assistant professor, associate professor, and full professor, the Department's mean faculty salary lags behind the corresponding mean faculty salary for Group II departments by \$2,200, \$2,900, and \$5,300, respectively. (Group II consists of 43 mathematics departments with NRC faculty reputation ratings similar to our Department's.)

Goal 2: A mathematics faculty whose size matches its responsibilities

No progress has been made towards this goal. The analysis undertaken in 1989 revealed that instructional responsibilities of the Mathematics Department warranted a faculty of 44. Our current faculty consists of 38 tenured or tenure-track positions, one senior instructor, and one lecturer. Expansions of the Honors College, and fulfilling the demands of SACS may require new faculty if the University decides to require all its undergraduates to take some mathematics.

Goal 3: Physical facilities adequate for the mission of the Department

The Department continues to have inadequate office and classroom space. Mathematics classes are held in almost every campus building, at one time or another, often in classrooms that are neither designed nor maintained for mathematics instruction. Very frequently, there is no place where a team of three research collaborators can meet to carry out their research. Desk space, much less office space, is frequently unavailable for visiting research mathematicians. The need for a major renovation of LeConte continues to be great. Recurring problems with the worn out heating/cooling system in LeConte make Department offices unusable for extended periods. Intermittent failures in the plumbing system and the alarm system put the health and safety of the students, faculty, and staff in jeopardy.

Goal 4: Staff support adequate for the missions of the Department.

With the hiring this past year of an additional staff member to support our extensive and diverse computational needs, the current staff are now better able to support the missions of the Department than was the case a year ago.

Goal 5: Teaching loads and class-size should be set to ensure research and teaching at a high level of quality.

Until the proposed expansion of the Department faculty can be undertaken, the Department cannot undertake any additional teaching responsibilities, such as those that might be produced by SACS, the expansion of the Honors College, or by the South Carolina Department of Education in its guidelines for teacher education.

The Department adheres to the long-held position of The American Mathematical Society and of The Mathematical Association of America. In particular, we adhere to the following, taken from *Guidelines for Programs and Departments in Undergraduate Mathematical Sciences*, published by M.A.A. in 1993.

“Faculty for whom personnel decisions are based upon assessment of substantial scholarly accomplishments in conjunction with doctoral level teaching and research supervision should have teaching assignments that do not exceed two courses per semester.”

Goal 6: Supporting a viable, competitive graduate program.

Our GTA budget was increased by \$40,400 during 1994–95 and 1995–96. The Director of Graduate Studies has used this increase to make the stipends we pay to graduate assistants more competitive. In addition, last year the Department used salary savings to up-grade the computer resources available to its graduate assistants.

Goal 7: A budget adequate to fund recurring expenditures

This goal is further out of reach than it was at the inception of our five-year strategic plan. Although the Department received the \$40,400 increase in its GTA budget referred to above, it has had its budget of recurring funds for other categories reduced by about \$89,000 since 1994. It is only because of savings since 1994 related to one death, one retirement, three resignations, five faculty on leave at half or no pay, one repeatedly, and support provided by grants that the Department’s missions have not been harmed.

Goal 8: Subscriptions and holdings of the Mathematics Library need to be increased.

They have been decreased.

Goal 9: Develop graduate degree programs or tracks in applied mathematics.

A faculty committee has made some proposals regarding this goal which have been discussed by the Graduate Advisory Council.

Goal 10: The reservation of two unclassified slots for visiting faculty.

The Department has obtained no additional faculty positions this year.

Goal 11: Entering GTA’s will have adequate command of English.

On average, the TOEFL scores of entering GTA’s are above 600, although on occasion in individual cases a few GTA’s with scores below 600 have been admitted for specific reasons.

IV. Assessment of Performance Indicators

Performance Indicators for the Research Mission

1. The number of research publications in 1996.

During 1996, 22 members of the Department published 3 books, 44 journal articles, 9 book chapters, and 3 articles in conference proceedings.

2. The number of faculty members receiving external funding for their research in 1997, and the amount of funding they received.

During 1997, 17 faculty members of the Department were PI's or co-PI's of 30 external grants funded by ARO, DEPSCoR, DOD, Mobil, NSA, NSF, ONR, and the State of SC, where the total of the amounts of those grants over their funding periods exceeded \$6,600,000.

3. The number of occasions faculty members were invited to address national and international research conferences, or to give seminars or colloquia at other research institutions in 1996.

During 1996, 21 faculty members gave 43 invited talks, and 11 gave 31 contributed talks, at national and international research conferences. In addition, 11 faculty members gave 27 invited seminars or colloquia at a number of research institutions, including Bowling Green State University, Free University of Amsterdam, Johns Hopkins University, Indiana University, Mathematical Institute of the Bulgarian Academy of Sciences, Mathematical Sciences Research Institute, Berkeley, California, Oklahoma State University, UCLA, Sofia University, University of California at Riverside, University of Colorado, University of Hawaii, University of Paris, University of Texas, University of Wisconsin, USC Spartanburg, and Worcester Polytechnic Institute.

4. The editorial boards of research journals on which members of the Department served in 1996.

During 1996, 12 faculty members served on 18 editorial boards including *Algebra Universalis*, *Advances in Computational Mathematics*, *American Mathematical Monthly (Problem Section)*, *Analysis Mathematica* (including the Deputy Editor-in-Chief), *Approximation Theory and its Applications*, *Combinatorica*, the *East Journal of Approximations*, *Journal of Approximation Theory*, *Journal of Complexity*, the *Journal of Constructive Approximation* (4 faculty members including the Editor-in-Chief), *Mathematics of Computation*, *Journal of Complexity*, *Numerische Mathematik*, *SIAM Discrete Mathematics*, *SIAM Journal on Numerical Analysis*, *Topology and its Applications*, and *Topology Proceedings*.

5. The national and international oversight panels on which members of the Department served in the last calendar year.

During 1996, 5 faculty members served on national or international oversight panels.

6. The number of organizing committees for national and international research conferences on which members of the Department served during 1996.

In 1996, 12 faculty members served on organizing committees for 15 conferences.

7. List of some of the research activities directly linked to private industry.

Some faculty have collaborated with several companies. Lockheed Martin and KT Tech are interested in the techniques of faculty member Dr. DeVore for image processing including compression, noise reduction, feature classification, and image registration. The Department has a number of excellent researchers working in wavelet theory, an area in which many major corporations have research groups. Applications of wavelet theory can be found in medical imaging, communications, and numerical simulation. After

McDonnell-Douglas asked one faculty member (Dr. Jawerth) for help with the hardware implementation of some compression algorithms he had developed, he started a company, Summus, Ltd., that has become a leader in implementations of wavelet technology. During the last six months, Mobil Technology Company has notified the Department that it is providing an unrestricted research gift of \$85,000 to support the research of faculty member Dr. Wang in fluid flow porous media.

8. Awards and Recognition.

The Hardy-Ramanujan Award: Drs. Michael Filaseta and Ognian Trifonov (1991). This international award recognizes outstanding work in number theory.

Premium for Research in Mathematics, Soviet Academy of Science: Dr. Vladimir Temlyakov (1990).

Silver Medal in the Exhibition of Nation Economic Achievement, USSR: Dr. Vladimir Temlyakov (1989).

Outstanding Publication Award, Soviet Academy of Science: Dr. Vladimir Temlyakov (1989).

Alexander von Humboldt Fellows: Drs. Ronald DeVore (1976–77), George McNulty (1983), and Anton Schep (1987–88).

Fulbright-Hays Professorship: Dr. George McNulty (1982–83).

NSF Postdoctoral Fellows: Drs. Peter Nyikos (University of Chicago 1974–75) and Howard Becker (California Institute of Technology 1982–84).

NRC (Canada) Postdoctoral Fellow: Dr. George McNulty (1972–73).

Swedish NSF Postdoctoral Fellow: Dr. Bjorn Jawerth (1980–82).

Endowed Chairs:

Dr. Ronald DeVore The Robert L. Sumwalt Professor of Mathematics

Dr. Bjorn Jawerth The David W. Robinson Professor of Mathematics

Russell Award for Research in Science and Engineering: Drs. James Roberts (1979), Peter Nyikos (1990), and Ronald DeVore (1995).

Performance Indicators for the Teaching Mission

1. Awards and Recognition

In 1987, the most recent occasion for review of graduate programs in mathematics at public institutions in the state, the South Carolina Commission on Higher Education awarded the Department its Commendation for Excellence, citing the high quality of its programs leading to the M.S. and Ph.D. in mathematics.

USC Outstanding Faculty Member: Mary Ellen O’Leary, M.A. (1994). This distinction is awarded by the USC Educational Foundation.

South Carolina Honors College Awards: Outstanding Teacher: Dr. David Sumner (1981); Outstanding Science Teacher: Drs. David Sumner (1988), Ed Scheiblich (1989), James Roberts (1991).

Mortar Board Excellence in Teaching Award: Dr. David Sumner (1988, 1993); Dr. Daniel Dix (1997).

USC Freshman Advocacy Award: Mary Ellen O’Leary, M.A. (1991).

Lilly Foundation Teaching Fellows: Drs. Maria Girardi (Junior Fellow 1993–94), Douglas Meade (Junior Fellow 1994–95), and James Roberts (Senior Fellow 1993–94).

AMOCO Outstanding Graduate Teaching Assistant: Margaret Reese (1989)

AMOCO Outstanding Teaching Award finalist: Dr. James Roberts (1996, 1997).

The Graduate School's Outstanding Graduate Student Award: Dr. Zhiying Zhao (1991); Mr. Marius Mitrea (1992); Mr. Zsolt Lengvasky (1994)

The Educational Foundation's Outstanding Teaching Assistant Award: Dr. Christine Sun (1991) finalist and Ms. Sharon Morris (1992) finalist.

2. Summary of peer and student evaluations of teaching.

On the College of Science and Mathematics Student Teaching Evaluations done in the 1996 Fall semester (for all courses taught, undergraduate and graduate, including non-science/engineering service courses), Department averages on the 1,490 responses for classes taught by faculty were the following, where 0 = strongly disagree, 1 = disagree, 2 = neutral, 3 = agree, and 4 = strongly agree: displays a clear understanding of the subject 3.24; is consistently well-prepared for class 3.28; motivates students to learn subject 2.48; gives clear and helpful responses to student questions 2.74; is accessible outside of the classroom 2.99; is concerned that students learn the material 2.95; treats students with respect 3.21; grades fairly 3.09; examinations and assignments were quickly returned 3.27; clearly explains what is expected of the students 2.99; class time was well-utilized 3.14. On the overall rating of the instructor responses the average was 2.75, where 0 = inadequate, 1 = fair, 2 = good, 3 = very good, and 4 = excellent. For classes taught that semester by graduate teaching assistants, the averages on the 590 responses were the following: displays a clear understanding of the subject 3.24; is consistently well-prepared for class 3.39; motivates students to learn subject 2.64; gives clear and helpful responses to student questions 2.87; is accessible outside of the classroom 3.17; is concerned that students learn the material 3.11; treats students with respect 3.36; grades fairly 3.31; examinations and assignments were quickly returned 3.50; clearly explains what is expected of the students 3.11; class time was well-utilized 3.22. On the overall rating of the instructor responses the average was 2.98.

Each year the Department's tenured full professors (18 in 1997–98) evaluate the teaching of all other tenure-track associate and full professors (18 in 1997–98) and send each person being evaluated a letter that contains: general ratings of that person's performance in each of the areas research, teaching, and service; and detailed statements concerning such. In addition, the Department's tenured associate and full professors provide such evaluations to the assistant professors and untenured associate professors (2 in 1997–98). Finally, each year the Department Chair provides each faculty member a written evaluation of that faculty member's performance in research, teaching, and service.

V. Action Plan for 1998–99

1. The Department's Physical Space Needs

For almost two decades the Departments of Mathematics and Statistics have awaited the implementation of the University's plan to assign the whole of LeConte College for the use of these two departments. The mathematics faculty is firmly committed to the development of LeConte College into a first-class facility for mathematical education and research. The faculty strongly opposes relocation to another building. Finally, the University is poised to implement its long-term plan and address the inadequate physical space which has impaired both our research and our teaching missions.

Apart from the Departments of Mathematics and Statistics, seven programs are housed in LeConte on a temporary basis. Based on a series of memoranda from then Provost Moeser and then Dean Odom, as well as slated completion dates for the renovation and expansion of McMaster College now under way, we anticipate that these programs will be relocated outside LeConte College by the beginning of the 1998 Fall semester.

- By July 1998, the **Department of Art** will move those portions of its operation currently in LeConte College to their new facility in McMaster. *The space in LeConte College freed by this move should be assigned to the Department of Mathematics. This space consists of two large classrooms, one medium classroom, one seminar room, and three offices. They should be ready for use at the beginning of the 1998 Fall semester.*
- **Navy and Air Force ROTC** will move to space in the Coliseum to be vacated when Media Arts moves into McMaster. *The space in LeConte College freed by this move should be assigned to the Department of Statistics. At the same time, the space on the fourth floor of LeConte College currently occupied by Statistics should be assigned to Mathematics. This space consists of small seminar rooms and offices. It should be occupied by Mathematics by the beginning of the 1998 Fall semester.*
- **The Academic Skills Program, Academic Support Services, and Disability Services** (housed at 1625 College Street before the construction of the Judicial Advocacy Center), now temporarily located in LeConte, should be moved to more appropriate quarters, according to the agreement between then Dean Odom and then Provost Moeser. These programs currently occupy two small classrooms and several offices.
- **The Association for Education in Journalism and Mass Communication** is slated to leave the University by the end of the Spring 1998 semester. *The space in LeConte freed by this move should be assigned to the Department of Mathematics. It consists of one large classroom and two suites of offices.*

2. Address the Lag in Faculty Salaries

It is prudent at this point to protect the interests of the University vested in its senior faculty.

Ultimately, the remedy will involve an increase in recurring funds on the order of \$150,000. This means that support may be needed from the Board of Trustees and the Legislature. To address this problem the following actions need to be undertaken:

- i. Gather data concerning the salaries and demographics at our peer and aspirant institutions.
- ii. Assess the data to determine the magnitude and timing of the problem.

- iii. Work up a detailed provisional plan of incremental raises to overcome the dangers of the salary lag.
- iv. With the data and the provisional plan in hand, persuade the Dean, the Provost, and the President that action is needed to protect the University's interests.
- v. Support the administration in its campaign to obtain this increase in recurring funds.

3. Address the Inadequate Size of the Faculty

The plan is to increase the size of the faculty by one position in each of the next five years. This increase will enhance both the educational mission and the research mission of the Department. The new positions initiated in the third and fourth years should be permanently designated for visitors.

4. Address the Support of the Department's Principal Missions During the Summer

There are two parts to this plan:

- A. Provide a research grant of 7.5% of base salary to research mathematicians who teach a course in the summer. The researcher would be required to submit to the Department a research proposal and be expected to report to the Department on the results.
- B. Provide up to four research grants of up to 15% of base salary each summer. These grants are primarily intended to support research mathematicians at various transition points (e.g. new faculty, those with underfunded or lapsed external grants, those attempting new lines of research, those returning to full-time faculty duty after a term of administrative duty, etc.)

5. Address the Department's Role in the Upcoming SACS Accreditation Reaffirmation Process

The Department Chair should suggest to the Administration various members of the mathematics faculty who might take part in this process.

6. Address the Development of Degree Programs or Tracks in Applied Mathematics

By the end of the 1998 Fall semester have a detailed draft of a new program, including degree requirements, new courses, sample programs for individual students, and an analysis on how the new program might impact our current course offerings and faculty workloads. By the end of the 1999 Spring semester, the Department should decide whether to adopt a final plan. If the Department should decide to change our degree requirements, the following year we would have to work any new plan we adopted through the approval system.

7. Address the Department's budget in recurring funds

The Department needs to continue to call its accomplishments and value to the University to the attention of the Dean's Office and to request support, rather than competition for funds, from the Dean's Office and the higher administration.

The Department's recurring funds were reduced by about \$13,000 in 1994–96 when its recurring funds were reduced by \$53,550 to pay College obligations, and its budget for graduate assistants was increased by \$40,400. Also, during that period the Dean's Office removed 2/11 of the Graduate Director's salary from the Department's recurring funds and, so far, has not undone that reduction. (In the 1997 Fall semester the Department had 79 graduate students, many of whom are the primary instructors of courses and are under the supervision of the Graduate Director.) The Department's recurring funds for supplies, travel, contractual services, etc. were reduced by \$4,793 in 1996–97 in order to fund the the excess of the salaries

of three new tenure-track faculty members over those of the faculty members they replaced, and later those recurring funds were reduced further by \$3,649 to fund the excess of the salary of an Assistant Systems Manager over that of a Student Services Coordinator the Department decided not to replace (due to the great need for an Assistant Systems Manager). In two other cases, one in which a second staff member was not replaced and another in which the salary of a departing staff member exceeded the salary of a replacement by about \$2,500, the Dean's Office permitted the Department to use the resulting funds for staff raises. Recently, however, the Dean has informed the Department that he is unable to permit the Department to retain all of the salary of a faculty member who retired in 1997, and so when the Department replaces that faculty member and another one who resigned, it may have to further reduce its recurring funds for supplies, travel, contractual services, etc. in order to attract excellent faculty members who will eventually be able to acquire tenure.

VI. Resource Requirements

Items are listed in priority order. All funds are to be recurring and obtained from sources external to the Department budget.

1. Provide salary raise funds \$152,000 (Goal 1)
2. Provide funding for one new faculty position \$45,000 per year for each of the next five years (Goal 2)
3. Once the Navy and Air Force ROTC Departments, the A.E.J.M.C. (Journalism education institute), the Disabilities Program, and the Art Department vacate LeConte and the Departments of Mathematics and Statistics occupy all of LeConte, the Department of Mathematics will have adequate space for offices, seminar and meeting rooms, and computer labs. (Goal 3)
4. Increase educational supplies budget of \$20,000 by \$20,000 (Goal 7)
5. Increase USC employee travel budget of \$3,000 by \$27,000 (Goal 7)
6. Increase part-time teaching faculty budget of \$18,778 by \$20,000 (Goal 7)
7. Increase undergraduate student assistant budget of \$10,125 by \$8,000 (Goal 7)
8. Increase non-USC Employee Travel Consultants budget of \$4,600 by \$10,000 (Goal 7).