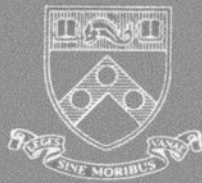


**Building on Excellence
Five-Year Plan
1988-1992**



University of Pennsylvania
School
of
Arts and Sciences

To the University Community:

The following document is the eighth in a series of School five-year plans to be published For Comment. This draft has been considered by the Academic Planning and Budget Committee, the SAS Board of Overseers, as well as the University administration, and it will be revised periodically by the School. Readers are urged to bear in mind the University tenets on future scale, which can be found in "Choosing Penn's Future."

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—Sheldon Hackney, President

—Thomas Ehrlich, Provost

Building on Excellence The School of Arts and Sciences Five-Year Plan 1988-1992

Table of Contents

	Page
Introduction	III
I. The Four Strategic Areas	IV
1. Research and Scholarship	IV
2. Undergraduate Education	V
3. Graduate Education	VIII
4. Lifelong Education	IX
II. Supporting Goals	X
1. Management and Efficiency	X
2. Physical Plant and Facilities	XI
III. Fiscal Status	XIII
1. The Past Five Years: FY 1982 - FY 1986	XIII
2. The Next Five Years: FY 1988 - FY 1992	XVI
IV. Resources	XVIII
V. Summary	XX
Conclusion	XX
Appendix A: SAS Planning Benchmarks: FY1987-FY1992	XXI
Appendix B: SAS Planning Timetable: A Schedule for the Development of the Five-Year Plan	XXII
Participants in the SAS Planning Process	XXIII

Building on Excellence The School of Arts and Sciences Five-Year Plan: 1988-1992

Introduction

The University of Pennsylvania has long been an innovator in liberal arts education. In the mid-eighteenth century, the College of Philadelphia, as Penn was then called, was unique among its colonial peers in its radical departure from the traditional ecclesiastical curriculum. It provided instruction not only in the classics, but also in the more "practical" disciplines, such as mathematics, physics, modern languages, and government. It also established early on a close relationship between the liberal arts and the professions. It was from their chairs in The College that James Wilson in law and John Morgan, Benjamin Rush, and William Shippen in medicine led the professional programs that made of Penn the nation's first university.

Such cross-disciplinary relationships established a tradition and a point of view that has continued throughout the history of the University. In the 1970s it led to a renewed focus on the centrality of the arts and sciences and an effort to better relate the strengths in the professional and graduate areas to a more fully-developed liberal arts core that would "best enable the University to face the future as a single community of learning." On the undergraduate level, the men's and women's student bodies, which already shared the same faculty, were formally united in a larger and stronger College. These and the then-separate graduate school, along with the social science departments in the Wharton School, were then integrated into what is now known as the School of Arts and Sciences.

Under the structure created in the spring of 1974, the School joined together 528 faculty members, 28 departments, 33 graduate groups, and eight academic programs and centers, becoming Penn's single largest component. From the beginning, SAS focused both on strengthening the core disciplines and on increasing interactions among the arts and sciences and with the professional Schools. New interdisciplinary majors were formed—bringing the number of undergraduate major programs to 45—dual degree options were expanded, three interdisciplinary graduate groups were added, and 12 new academic programs were established. The School began immediately to draw on Penn's rich diversity to create unique alliances and opportunities.

The initial task facing the School—to establish a coherent academic and administrative framework—has been achieved. Today, the School of Arts and Sciences faces a new challenge: to build a sense of shared purpose that will enable it to meet its goals of excellence. If it is to complete the transformation begun just over a decade ago, SAS must establish an enduring balance between the spirit of independent inquiry that is its special legacy, and a sense of collective mission.

The need for balance between individual and community purpose is also the focus of recent national concern over the state of liberal education. Critics, both within and without American colleges and universities, cite a growing tendency toward disciplinary isolation and a separation of the classroom experience from other aspects of campus life, from the community, and from the world at large. The call is being widely heard

for a redoubling of efforts against the fragmentation that limits the scope of higher education.

The plan that follows is built on the premise that the continued vitality of the School of Arts and Sciences requires the constant affirmation of the interdependence of all of its activities. The plan reflects the School's belief that the strength of individual disciplines enhances, and is enhanced by, interdisciplinary dialogue, and expresses a commitment to the integration of an international perspective into all educational endeavors. Only by maintaining a clear vision of its broad mission can SAS approach the coming decades as a School of distinction.

Development of the Plan

This plan is itself the result of an extraordinary collective effort. Beginning in the summer of 1985, ad hoc faculty committees were charged with the task of drafting statements that would capture the School's underlying mission in each of four strategic areas: research and scholarship, undergraduate education, graduate education, and lifelong education. A Task Force on Planning was subsequently established to help develop and oversee the planning process. Comprising two faculty members from each of the three SAS divisions (Humanities, Social Sciences, and Natural Sciences), the Dean, and the Vice Dean for Planning and Analysis, the Task Force met weekly to shape the plan, addressing the needs and goals of departments, divisions, and the School as a whole.

As the five-year plan evolved, it was reviewed regularly by the Overseers Planning Advisory Board and the three Planning Divisional Committees, and periodically by the full Board of Overseers and the Dean's Administrative and Faculty Advisory Committees. In the spring of 1986, departments were asked to comment on an early draft and to submit updated departmental plans. Their submissions were utilized by the Dean and the Task Force on Planning to expand and revise the School plan. (The Dean and Task Force continue to work with the departments on long-term issues not specifically addressed in the five-year plan.) All SAS faculty were asked to comment on a preliminary draft in February, 1986, and to review the complete plan in the spring of 1987. This interactive process has yielded not only the document that follows, but also an unprecedented commitment to a unified School of Arts and Sciences among all concerned.

Organization of the Plan

Presented first are the School of Arts and Sciences' five-year plans for each of its four strategic areas: research and scholarship, undergraduate education, graduate education, and lifelong education. These are followed by plans for two supporting areas: management and efficiency, and physical plant and facilities. The School's recent and projected fiscal status is then reviewed. The next section addresses the issue of needed resources and enumerates specific development goals. The document concludes with a brief summary and is followed by a number of appendices.

I. The Four Strategic Areas

Underlying the objectives of the School of Arts and Sciences is a broad and lasting commitment:

to promote an understanding of humanity and the universe by fostering an intellectual community of faculty and students engaged in the advancement of knowledge.

Within this context, its plans for the next five years are directed toward reaching this fundamental strategic goal:

to achieve School-wide distinction in the areas of research and scholarship, undergraduate education, graduate education, and lifelong education.

1. Research and Scholarship

Mission Statement

Research is the vital force of all disciplines, providing constant inspiration and renewal. A primary aim of the faculty and students in the School of Arts and Sciences is the vigorous pursuit of research of the highest intellectual standard. The purpose of this pursuit is to advance knowledge in whatever directions appear most promising, free of the need to justify goals or strategies in terms of their specific applications. Such basic research in the natural and social sciences and in the humanities, conducted openly in a community of scholars to the benefit of society, is our special mission.

Research in the School of Arts and Sciences is essentially the product of individuals, though there are many collaborative ventures. For this reason, the School strives to provide a supportive, collegial atmosphere as well as a wide variety of superior facilities to foster the scholarly aspirations of the faculty and students. Their achievements, in turn, enhance the reputation of the School.

In a university, excellence in scholarly research and excellence in teaching are inseparable. Scholars are fundamentally students, endeavoring to learn more about their disciplines, but they are also teachers, communicating their new findings to others. Teachers gain insight from interactions with their students. Conversely, students learn best about the questions on the frontiers of knowledge when those questions are being actively explored by their teachers. An understanding of the state of current knowledge and its temporary nature is important to students whatever their future careers.

External measures clearly reflect the excellence of SAS faculty. Since 1974, they have earned one Nobel prize, one Crafoord Prize, three MacArthur fellowships, and 90 Guggenheim awards. Two faculty members have been accorded Pulitzer prizes, 15 have been elected to the American Philosophical Society, 32 to the American Academy of Arts and Sciences, and 15 to the National Academy of Sciences. Departmental assessments also indicate the quality of research in SAS. In its 1982 review of 18 arts and sciences disciplines, the Conference Board of Associated Research Councils ranked 14 SAS disciplines among the top twenty in the nation—eight among the top ten. Four departments not included in this review ranked in the top two when an external review committee compared them to their counterparts nationwide. These achievements notwithstanding, considerable progress must still be made toward reaching School-wide distinction. One of Arts and Sciences' five-year goals is to help all of its departments achieve top-twenty status and to increase the number of its top-ten departments. To reach this goal, it must recruit and retain outstanding faculty and provide ongoing support for faculty research efforts.

Recruiting and Retaining Outstanding Scholars

Leading institutions are characterized by their ability to attract young scholars of extraordinary promise, to reward current faculty, and to consistently recruit senior scholars with broad national and international reputations. In the decades ahead, most American Universities will witness the retirement of a large proportion of their most established professors. If the School of Arts and Sciences is to enter the next century as an institution of distinction, it must begin now to recruit men and women noted for their excellence in teaching and scholarship while it provides for the continued support of current faculty.

Compensation. In order both to attract and to retain faculty of the highest caliber, Arts and Sciences must be able to offer competitive

salaries. Though notable strides have already been taken in this regard, it is necessary to continue to improve faculty and staff salaries to make them competitive with those at peer institutions. According to a recent survey, average salaries for standing faculty in the School of Arts and Sciences fall slightly short of the weighted average salaries of their counterparts at peer institutions. The School intends, by 1992, to bring average faculty salaries up to at least the weighted average of those offered by peer institutions.

Endowed Chairs. Although there are 36 faculty chairs in the School of Arts and Sciences, only eleven are fully funded. Not only do fully endowed chairs help the School attract outstanding teachers and scholars, they also release funds that can be used to support current faculty in a variety of ways. Term chairs that provide research funds also enhance efforts to retain outstanding faculty by providing seed money for project development, start-up money for experimental work, and funds for travel, equipment, and other teaching and research expenses. SAS will work to raise the funds needed to establish 75 new fully endowed chairs and 150 new term chairs.

Recruiting Women and Minority Scholars. SAS will focus on recruiting new, diverse faculty of the highest scholarly caliber, placing particular emphasis on attracting outstanding women and minority candidates. Though it has begun to increase the number of women on its faculty, SAS must still take major strides in both of these areas. The School recently conducted a study of the current pool of women and minority candidates in order to identify disciplines with high recruitment potential. SAS will continue to target areas in which women and minority scholars are available, and, at the same time, work to enhance the candidate pool by encouraging women and minority students at both the undergraduate and graduate levels to pursue academic careers.

Supporting Faculty Efforts

Research Support. The School will establish a number of mechanisms to help ensure faculty the kind of work environment in which research and scholarship can flourish. For example, seed money for project development, start-up money for new faculty, and funds for travel, support services, equipment and other current expenses are needed to facilitate the research process. To help provide this support, a School of Arts and Sciences Faculty Research Fund will be established to supplement the University's Research Fund. Approximately \$2 million per year—to be derived in part from an SAS development campaign and in part from other sources—will be designated for this Fund.

The School will enhance other types of research support as well. The Library is of utmost importance to Arts and Sciences scholars, yet the rapidly rising cost of books and periodicals continues to threaten the integrity of its collections. SAS supports the Library's efforts to build and preserve its holdings and to expand its traditional services through the incorporation of new technologies.

To ensure adequate computing facilities and access to needed databases, SAS is developing, in conjunction with the University at large, a computer network that will link faculty across graduate groups and departments and provide them with access to resources throughout the University and beyond. The School will also make available to faculty the services of computing consultants, who will provide instruction and advice on the use of computers for research purposes.

In support of the research efforts of young faculty, SAS has recently introduced a released time program whereby assistant professors in their second terms can apply for assignment of no duties for as long as one year to focus on research projects. This option provides faculty with a special opportunity to pursue scholarly interests at critical junctures in their careers.

Extramural Grants. In 1985-86 SAS faculty procured \$26.987 million in extramural grants (85.9 percent from the federal government), as compared to \$20 million in 1984-85. Though this represents a substantial achievement, a coordinated strategy for stimulating additional initiatives must be implemented. This would involve faculty development and the establishment of support services and incentives to encourage the acqui-

sition of extramural grants for research and academic programs. The School intends, for example, to create a central facility where trained staff provide assistance to faculty in the assembly and production of proposals. Such support is already offered in some science departments; it will, in coming years, be extended to all SAS faculty. These measures would facilitate the fulfillment of Arts and Sciences' five-year goal of increasing extramural support to \$50 million.

Interdisciplinary Initiatives. The School of Arts and Sciences has a tradition of interdisciplinary innovation. The departments of American Civilization, Folklore and Folklife, South Asia Regional Studies, History and Sociology of Science, Oriental Studies, and Regional Science are interdisciplinary by nature. Departments such as Classical Studies, History of Art, and Religious Studies may be considered interdisciplinary as well. Similarly, graduate groups such as those in comparative literature and demography draw on the conceptual resources of several disciplines. SAS faculty from across departments also work together on academic Committees—for example, in ethnohistory, Jewish studies, medieval studies, and language, culture and society—through which they share mutual research interests and work toward the development of pertinent courses.

The success of the Program for Assessing and Revitalizing the Social Sciences (PARSS) and the Cognitive Science Group also reflects the commitment of Arts and Sciences faculty to interdisciplinary collaboration. PARSS was established in 1984, through a grant from the Andrew Mellon Foundation. Since that time, faculty from across the University have been participating in monthly seminars in such interdisciplinary topics as "Human Nature" and "Technology and Culture" (87 faculty participated in 1984, over 150 in 1986). Seminars have led to ongoing research by faculty and graduate students, general conferences, and the development of interdisciplinary courses that have become part of the Penn curriculum.

The growing Cognitive Science Group includes faculty from the Arts and Sciences departments of linguistics, philosophy, and psychology, as well as the School of Engineering and Applied Sciences' department of Computer and Information Science. This Group—first established in the 1970s through a grant from the Sloan Foundation—explores a broad range of research questions in the area of cognition.

The School of Arts and Sciences strongly encourages the development of interdisciplinary initiatives, both formal and informal, and supports the concept of cross-disciplinary appointments. These collaborations build essential links within both Arts and Sciences and the University as a whole. SAS will continue to strengthen existing initiatives and pursue new opportunities for faculty interaction.

Research Centers. Eighteen academic Research Centers, most of them interdisciplinary, now exist in SAS. Many Arts and Sciences faculty are also active in inter-School Centers and Institutes, such as the Laboratory for Research on the Structure of Matter (LRSM) and the Joseph H. Lauder Institute of Management and International Studies. SAS Centers range from the Center for Analytical Research in Economics and Social Sciences (CARESS), to the Alice Paul Research Center—which promotes innovative work in the study of women, gender, and power—to the Philadelphia Center for Early American Studies.

Research Centers are uniquely capable of engaging the efforts of both faculty and graduate students, provoking interdisciplinary interaction, and sustaining and coordinating activities within disciplines. The School must strengthen its Centers by finding new sources of funding for their activities. Additional support is needed, in particular, for travel, colloquia, and equipment purchase and maintenance. SAS intends, by 1992, to target \$4 million of endowed funds for Research Centers. At the same time, Centers will be strongly encouraged to continue to pursue external research funds. The SAS plan also calls for the establishment of a standard procedure for the periodic review of Research Center activities.

International Perspective. SAS recognizes the increasing importance of establishing links not only between the arts and sciences and other disciplines, but also between the School and the international academic community.

Some Arts and Sciences Centers are dedicated to the interdisciplinary study of specific geographical areas. For example: the South Asia Regional Studies Center, which serves as an academic department as well as a Title VI National Resource Center*; the Middle East Center (also a National Resource Center) which produces scholarly publications and

sponsors instructional programs, faculty development opportunities, and joint degree programs with professional Schools; the Center for Italian Studies, which coordinates undergraduate and graduate programs in Italian language, literature, and art and, at the same time, works cooperatively with American and Italian universities in academic ventures; and the Center for Soviet and East European Studies, another Title VI Center, which coordinates and promotes research and graduate training on the USSR and the countries of Eastern and South Central Europe. SAS faculty also take part in academic Committees on African and East Asian studies.

SAS will continue to support existing Centers and Committees for area studies, and to investigate new opportunities for enhancing scholarly work in, for example, East Asian, Latin American, and West European studies.

The School of Arts and Sciences will also continue to take active part in University affiliations with academic institutions abroad. Since the mid-1970s, SAS has been participating in the Penn-Israel program: many faculty have served as visiting scholars at the Israeli Universities included in the program, and SAS has hosted a number of Israeli professors in return. The School also plays a large role in the United States Information Agency's (USIA) University Affiliation Program. Through this initiative, Arts and Sciences faculty work with the University of Ibadan in Nigeria to sponsor programs in the social sciences and humanities and collaborate with Mohammed V University in Morocco in the area of Oriental studies. Another USIA affiliation will link Penn and the Belgian Katholieke Universiteit Leuven in a joint summer institute for the interdisciplinary study of literature, under the sponsorship of SAS's Center for Cultural Studies. Affiliations such as these serve the dual purpose of promoting faculty exchange for teaching, research, and other collaborative efforts, and enriching the University through the contributions of visiting faculty from abroad.

2. Undergraduate Education

Mission Statement

In the tradition of its eighteenth-century founders, the undergraduate College of Arts and Sciences regards the enduring purpose of education as the liberation of the mind from ignorance, superstition, and prejudice. From its central position in an international research university, the College invites students to explore the broad spectrum of human knowledge and takes pride in its capacity to respond to the particular intellectual needs of those who join it. The College thrives on the diversity of scholars and students whose interests it sustains and whose intellectual goals it unites.

Study of the arts and sciences provides a solid basis for advanced scientific and scholarly research, for subsequent training in the professions, and for the informed exercise of the rights and responsibilities of citizenship. The College's goal is to help students to become knowledgeable about the world and the complexities of today's society, aware of moral, ethical, and social issues, prepared to exercise intellectual leadership, and enlivened by the use of their minds.

The College is committed to offering a broad education that will lay a durable foundation for critical and creative thinking. We believe that students should explore fundamental approaches to the acquisition and interpretation of knowledge through introduction to substantive bodies of current thought in the natural sciences, social sciences, and humanities. Equally important, they should learn to understand and evaluate the sources and methods from which this knowledge derives. In this way they can be led to appreciate the contingency of all knowledge and to participate in the ongoing excitement of intellectual discovery that is at the heart of the College.

We challenge our students to develop the skills of analysis and communication that will enable them to perceive pattern in complexity, render reasoned judgments, make wise choices under conditions of uncertainty, and join with others in the pursuit of common endeavors. They should, for example, be able to write and speak effectively and to use another people's language as one means of access to the diversity of contemporary and historical culture.

A student's emerging interests and talents find expression through an organized program of study in a major field. In the specialized context of the major, students investigate the traditions and contemporary status of an established branch of knowledge. The structured study of a discipline complements the general exploration of our intellectual heritage to provide the balance of educational breadth and depth to which the College is committed.

*Title VI Centers were mandated by the 1965 Higher Education Act to improve and strengthen the status of foreign language, area, and related instruction in the American educational system, particularly through the development of surveys, studies, and specialized instructional materials.

There is no single or easy path to the benefits of liberal education. A program of study must be shaped as a student grows. But the special strengths of the University of Pennsylvania—its combination of academic and professional excellence, its diverse and interdisciplinary tradition, its active community of scholars at all levels of experience—provide a setting in which the College can dedicate itself to nurturing honest, eager, and critical minds. The College welcomes those who seek to understand, appreciate, and contribute to the achievements of the human intellect.

The School of Arts and Sciences bears primary responsibility for defining Penn's commitment to liberal education. More than half of the University's undergraduates matriculate in the College, and SAS faculty provide more than half of the instruction received by Engineering, Wharton, and Nursing undergraduates during their first two years at Penn. In a rapidly changing world, the University looks naturally to the School of Arts and Sciences to preserve traditional educational values and to incorporate new concepts and technologies into the undergraduate curriculum.

Recruiting Outstanding Students

Underlying Arts and Sciences' plans in the area of undergraduate education is a commitment to recruiting a student body of the highest scholarly potential, with special emphasis on the recruitment and retention of minority students. Despite a continuing decline in the number of undergraduate applicants nationwide, the SAS applicant pool continues to grow. In FY 1982, 6832 students applied to the School, 48 percent of whom were accepted; in FY 1986, 8588 applied, of whom 37.8 percent were accepted. As SAS becomes increasingly attractive to students, it becomes increasingly selective. The quality of its undergraduate student body has improved considerably since the mid-1970s. Since the early 1980s, significant progress has been made in increasing the geographical diversity of College students while maintaining their high quality. To continue to admit highly qualified candidates without regard to economic status, the School must substantially increase its endowed student aid funds. To this end, the Arts and Sciences plan calls for the establishment of an Undergraduate Scholarship Endowment Fund.

Recruitment of Minority Students. SAS will make a special effort to provide financial support for minority students. The School recognizes the importance of developing undergraduate interest in academic careers; it is particularly critical that minority students be encouraged to join the professoriate of the future.

Improving the Quality of the Undergraduate Experience

Although the School of Arts and Sciences offers an undergraduate program of great flexibility and richness, it has often failed to provide a coherent academic structure that encourages students to develop a balanced academic perspective. If the undergraduate experience is to be significantly improved, more intellectual guidance must be provided—through advising, teaching, and the nature of the curriculum itself. Over the next five years, SAS will focus on strengthening the undergraduate curriculum, increasing student-faculty interaction, and taking the lead in coordinating College programs with those of Penn's other Schools. The University's recently established Undergraduate Education Fund is already helping to support many innovative initiatives. SAS intends to establish a complementary Fund to further these efforts.

The Distributional Requirement. The distributional requirement is designed to ensure the breadth of an Arts and Sciences undergraduate education. Since October 1985, an ad hoc faculty committee has been working to enhance this requirement. Its efforts have resulted in the decision to organize the requirement in terms of broad educational principles, rather than along traditional departmental and divisional lines. To fulfill the revised requirement, students will select courses in the following areas: Society, History and Tradition, Arts and Letters, Formal Reasoning and Analysis, The Living World, The Physical World, and Science Studies. SAS has placed a high priority on rationalizing and strengthening the distributional requirement to help undergraduates from both the College and other Schools effectively design their arts and sciences curricula.

The Major. Major programs play a critical role in providing depth in the undergraduate academic experience. To ensure their continued effectiveness, SAS major programs are reviewed regularly, as part of a general departmental review process. A review cycle is currently underway; each major will be assessed to determine how well it reflects an effective

definition of the subject or discipline, and whether it includes a coherent core of courses that enables students to explore its methodologies and goals in depth. Departmental honors programs are also being re-evaluated, with special attention to the possibility of extending to all students such offerings as individual research opportunities. Some departments have already enriched their major programs by establishing senior seminars and student research options (see below, "Undergraduate Research Opportunities").

Interdisciplinary Program. Strong departments are further enriched by collaboration with each other. In SAS, undergraduates can reap the benefits of these collaborations by opting for one of several interdisciplinary majors. Some, such as the Comparative Literature program, involve the efforts of faculty from several Arts and Sciences departments. Others—such as the majors in Biological Basis of Behavior and in Women's Studies—draw on the resources of several Schools. SAS also plays a major role in centrally administered interdisciplinary programs. A large proportion of the courses offered in the Afro-American studies program, for example, are taught by Arts and Sciences faculty. The School is now in the process of evaluating all of its interdisciplinary programs within the context of its overall departmental review.

Writing Competency. The Writing Across the University program (WATU) was established by Arts and Sciences in 1982 in response to a growing awareness of the need to provide undergraduates with comprehensive instruction in the art of writing. Rather than focus its efforts within the English department, WATU established a writing component in courses in a wide variety of disciplines. The program's goal was to integrate the development of writing skills into the broad undergraduate curriculum.

WATU has grown considerably since its inception. Now directed by the undergraduate deans of SAS, Wharton, Nursing, and Engineering, it offers 138 writing enrichment courses across all four undergraduate Schools. WATU supplements its classroom efforts with other writing resources: the Writing Center, located in the department of English and in the Wharton and Nursing Schools, which is available to all University students in need of individual assistance; the Writing Lab, where students affiliated with writing-intensive courses can learn how to use computers in the composition process; and the Peer Advising Program, where undergraduate advisors provide freshmen with writing instruction and support, both in freshman seminars and in residences. WATU is rapidly becoming an established feature of the undergraduate curriculum. Its future goals include establishing the Writing Lab as an instructional center and a resource to both faculty and students, increasing WATU visibility among faculty in all four undergraduate Schools, and developing an intensive writing component for all Penn freshmen.

Foreign Language Skills. SAS plans to enhance foreign language instruction in several ways: by emphasizing the connection between language learning and the investigation of cultural perspectives; by continuing to develop proficiency-based foreign language instruction and testing; by supporting the use of computers and other technologies in language instruction; and by fostering existing dormitory-based initiatives, such as the successful Modern Language College House program, now in operation for over 11 years. SAS will continue to stress the importance of its undergraduate language requirement, believing it essential that all students become proficient in a language other than their own.

Satellite technology offers rich opportunities for the development of language skills and intercultural understanding. The Center for Soviet and East European Studies will soon begin to use this technology to bring Soviet television broadcasts into the classroom. In addition, an Arts and Sciences ad hoc committee has recently decided to move forward with a plan to build the capacity to receive, and integrate into the curriculum, similar broadcasts from around the world.

Other Essential Skills. SAS will explore ways to ensure that all of its undergraduates develop strong oral communication, analytic, and computer skills. As the new distributional requirement is further defined, these needs will be given particular attention. Progress is now being made in several departments in integrating a computer literacy component into undergraduate courses.

High-Quality Instruction. A prerequisite of effective undergraduate education is high-quality teaching. Currently, the departments of English, Chemistry, Music and Physics, as well as some foreign language

departments, offer training programs for graduate teaching assistants. SAS plans to develop a School-wide training program to provide workshops and informal guidance for all Arts and Sciences teaching assistants. Efforts to improve faculty teaching will be implemented as well. SAS is also planning to revise and broaden the teaching evaluation process; for example, teaching evaluation histories for all faculty will be distributed to departments for consideration in personnel decisions. Ultimately, SAS hopes to establish a Teaching Resource Center to serve both teaching assistants and faculty.

The Freshman Year. The absence of an optimal curricular structure has too often resulted in a limited and unimaginative pattern of course choices, particularly in the freshman year. The School of Arts and Sciences intends to ensure that the freshman year is a challenging intellectual experience during which students begin to experiment with the diversity of SAS offerings. The implementation of a restructured distributional requirement, for example, will help guide entering students toward a selection of courses that is both broader and more meaningful.

New mechanisms are also being established to ensure direct faculty-freshman interaction. Currently, most freshmen have limited personal contact with standing faculty; individualized guidance and seminar instruction are often provided by teaching assistants and lecturers. SAS has, therefore, begun to move toward increasing the proportion of senior faculty teaching small freshman courses. Many departments have already expressed their commitment to this effort. The School has also begun to experiment with an intensive, dormitory-based advising program in which individual faculty members work with small groups of freshmen to promote and support thoughtful educational planning. Two pilot programs, one located in Kings Court/English House and the other in the Quadrangle's Community House, began this past fall, with thirty-one SAS faculty participating.

Student Interest in Academic Careers. In view of projected massive retirements from the professoriate in the 1990s, the School of Arts and Sciences must share in the preparation and encouragement of qualified students for academic careers. In the coming years, more outstanding undergraduates must be persuaded to pursue graduate study in the learned professions, at Penn or elsewhere. This involves providing students with research experience as well as with appropriate information and guidance.

Undergraduate Research Opportunities. A number of Arts and Sciences departments offer undergraduates individualized research opportunities. Under the guidance of a chosen faculty member, students can design and implement their own projects for course credit. Many departments also offer senior seminars, through which students explore research topics within a more structured context. Such opportunities not only foster fruitful student-faculty interaction but also help students build research skills and develop in-depth understanding of specific topics. The School will continue to support existing options and to encourage all departments to offer senior seminars and individualized research options for their undergraduate majors.

SAS also plans to offer special summer research opportunities for gifted undergraduates. Students will work with faculty members to explore selected topics. This program will promote the development of ongoing student-faculty interaction and provide undergraduates with unique research experience.

Programs for Academically Distinguished Undergraduates. Two special University programs help attract outstanding undergraduates to the College. First, the Benjamin Franklin Scholars Program provides gifted students with enriched curricular options: over 50 small General Honors courses are currently offered in a wide range of subjects; a research registry helps students arrange internships and independent study with University faculty engaged in research of special interest; and comprehensive advising is provided throughout students' undergraduate careers.

The University Scholars Program allows students to combine the pursuit of the undergraduate degree with focused graduate study. This program seeks out and encourages talented undergraduates with aspirations to advanced study in any of Penn's graduate programs.

SAS recognizes the importance of these programs and will contribute to their development through additional funding, drawn in part from the Undergraduate Education Fund. The School will also look at ways to strengthen its General Honors courses, focusing in particular on enhancing the writing component.

Submatriculation. Another option for outstanding undergraduates is

submatriculation. Many Arts and Sciences departments offer special programs through which students can earn bachelor's and master's degrees concurrently. As SAS conducts its departmental reviews, it will examine all submatriculation programs in order to ensure their consistent quality.

International Perspective. SAS will continue to promote the development of new courses on international subjects, the inclusion of an international focus in courses that are now entirely domestic in content, and the refinement and creation of majors, minors, and concentrations that are internationally oriented and may involve the cooperation of two or more academic departments. The School will also support the ongoing development of study-abroad opportunities and of informal, campus-based learning experiences, such as the three Living-Learning programs offered in the undergraduate High-Rise dormitories: the International Project, the East Asia Program (both over a decade old), and the more recently established Latin American Program.

Essential to the vitality of Arts and Sciences' international dimension is continuous interaction with academic institutions abroad. In 1984, SAS faculty—believing that students develop true understanding of international diversity only through direct contact with other cultures—reinforced the School's longstanding commitment to international exchange by approving a formal resolution to promote study abroad.

SAS is now involved in numerous study-abroad programs, both directly and indirectly. Each year, College of Arts and Sciences students participate widely in Penn's twelve overseas-study programs, many of which were originally developed by SAS language departments, as well as in programs sponsored directly by the School of Arts and Sciences. The English department offers its best students a rigorous junior year in London. The German department, in conjunction with Wayne State University, sponsors a Junior Year Abroad program in both Munich and Freiburg. The College of General Studies administers undergraduate summer programs in France, Italy, Holland, England, Germany, Greece, Spain, Nigeria, Brazil, Argentina, China, and Taiwan. SAS will continue to encourage student participation in international programs.

Advising. This is an essential element of the entire undergraduate experience, not only of the freshman year. Currently, College advisors perform a crucial and effective service, offering guidance and referrals in academic and other matters. However, the requirements of a student body as large as that of the College (approximately 1,400 freshmen enter every year) reach beyond the current system's capacities. Undergraduates require particular assistance during the first 18 months of their college careers—a time of exploration that culminates in the selection of a major. To supplement the efforts of the College Advising Office—which will continue to assist students from matriculation to graduation—a full-scale faculty advising program will be established to serve undergraduates during the pre-major period. This program will be based upon the concept of the faculty mentor: its goal will be to help students clarify their academic goals through ongoing, informal discussions with assigned faculty members. Once students have chosen their majors, departmental advisors are to fulfill this mentoring role.

SAS plans, for example, to develop several residential programs, modeled on the experimental Kings Court and Community House programs (see "The Freshman Year," above), to serve upperclassmen as well as freshmen. At the same time, the School will continue to work with the University's Office of Residential Life (under the auspices of Student Life) to develop other dormitory-based initiatives. The recently established Assistant Dean advising program now in operation in Hill House, the Quad, Harrison Hall, and Kings Court/English House is jointly run by the College Advising and Residential Life Offices. Through this program, resident Assistant Deans—trained by the College—provide SAS undergraduates with academic guidance.

SAS will also continue to facilitate the advising process through computerization. The College Information Management System (CIMS), an office automation and student information system recently implemented in the College's Records and Advising offices, provides instant access to all student academic data (see *Management and Efficiency*, pages X-XI). The School is about to begin the second phase of this project, in which it will link the existing system to academic departments and other major program offices. This enhancement will give faculty advisors direct access to the specific data needed to help students make informed academic decisions. SAS also plans to extend CIMS to include resident Assistant Deans.

3. Graduate Education

Mission Statement

As apprentice scholars, graduate students bring stimulating new perspectives and youthful energy to our programs. Their dissertation and seminar efforts account for an important portion of our research and scholarship. Graduate students also challenge the faculty to provide advanced, in-depth instruction—an essential complement to the broad-based teaching required by the undergraduate curriculum.

The Graduate Division of Arts and Sciences offers both doctoral and master's degree programs. The primary purpose of doctoral education is to prepare scholars and scientists to make original contributions to the development of their disciplines. The doctoral academic program instructs students in the materials, methods, issues, and problems of the discipline, initiates them into scholarly or scientific research, and prepares them to communicate their findings to colleagues and students. In some disciplines a master's program is offered. Such programs instruct students in the methods and materials of a field and include some involvement in research.

Beginning in the 1990's many professors in universities and colleges will retire and need to be replaced by a new generation of scholars. The Graduate Division of Arts and Sciences has both an opportunity and an obligation to produce scholars to fill this critical need. An indicator of our continuing success in this endeavor is the number and quality of placements of our Ph.D. graduates in academic positions.

Doctoral study provides an opportunity for dedicated students to immerse themselves in the intellectual activities and environment of the University. Accordingly, the faculty encourages full-time participation in academic life and strives to organize its doctoral programs to that end.

Distinctive graduate programs are the cornerstone of School quality. They attract outstanding faculty while enriching the undergraduate educational environment. SAS is committed to enhancing the quality of its graduate programs, and to ensuring that they fully engage the talents of their students, providing them with first-rate training for careers as scholars, researchers, and teachers.

The School of Arts and Sciences' Graduate Division is structured by graduate groups. The Division now comprises 36 such groups, some of which fall within departmental boundaries, but many of which cross departmental and disciplinary lines. Within this structure, graduate education in general, and the development and administration of the Ph.D. in particular, are chiefly the responsibility of the faculty. Graduate group faculty, for example, make admissions decisions and certify students' successful completion of degree requirements.

The role of the Graduate Division administration is to support the intellectual efforts of graduate groups, review their programs and activities, provide incentives and rewards for successful programs, monitor students' progress, and provide students with advice and assistance as needed. The Associate Dean for Graduate Studies also oversees the Arts and Sciences Research Centers.

The Division's decentralized structure facilitates interdepartmental collaboration as well as close student-faculty interaction. The plans that follow reflect this structure.

Recruiting Outstanding Students

Central to SAS's five-year plan for graduate education is the recruitment of outstanding students into its graduate programs. Currently, 2,200 students are enrolled in doctoral-granting programs in the Graduate Division. By the mid-1990s, large numbers of faculty will retire and higher education will face a shortage of qualified replacements. With this prospect in mind, SAS plans to heighten its efforts to prepare new, first-rate scholars, partly by increasing the size and quality of its graduate student body over the next five years. The School intends, by 1992, to increase the number of its doctoral students by 20 percent.

Recruitment of Women and Minority Students. The increasing demand for young scholars will present special opportunities for women and minorities. The School of Arts and Sciences plans to increase considerably the proportion of women and minority students within its graduate student body, particularly in disciplines in which they are still minimally represented. Several departments have already launched special initiatives for recruiting such students. The department of English, for example, which has become a national leader in feminist literary studies, is rapidly strengthening its Afro-American focus and making concerted efforts to attract outstanding Black students to its graduate programs.

The School will encourage other departments to develop similar recruitment strategies.

Fellowships. In order to attract top students, SAS must increase the number of available fellowships while maintaining its ability to provide adequate student stipends. Progress has already been made—University fellowship funds for Arts and Sciences have quadrupled since 1980. At least 54 percent of its graduate students currently receive support—at least 5 percent through external sources, and 10.7 percent through faculty research grants. Six-hundred and thirty-six students receive full or almost full funding through University and School sources (exclusive of individual faculty research grants). Available support includes approximately 400 teaching assistantships, 158 University fellowships (including 20 Mellon and 60 multi-year William Penn and Annenberg awards), 24 Title VI fellowships, six fellowships provided by the Program for Assessing and Revitalizing the Social Sciences (PARSS), plus a number of training grants. Arts and Sciences' goals for 1992 are to provide full-time funding for 1000 students, including at least 100 minority students, and to offer at least 200 new multi-year fellowships. SAS will also continue to encourage the development of opportunities for graduate student support through faculty research activities, and support students in their efforts to procure external funding.

Communication. Although many SAS graduate groups now attract outstanding students, some of its most distinguished groups have difficulty drawing students of an appropriate caliber. This problem often stems from a lack of visibility as well as a lack of financial resources. As part of a general communications initiative, Arts and Sciences plans to develop a comprehensive, coordinated marketing strategy for its graduate programs. The School will, for example, provide graduate groups with the funds needed to produce new brochures and other informational materials, bring prospective candidates to campus, and send faculty on recruiting trips.

Strengthening Graduate Programs

Program Review. In order to ensure the continued strength of its graduate programs, the School of Arts and Sciences engages in an ongoing process of program review. A seven-year review has just recently begun. All graduate programs will be systematically evaluated through departmental self-study as well as internal and external committee review. (Interdepartmental groups are being evaluated as well, by specially appointed committees.) By comprehensively identifying strengths and difficulties, SAS helps ensure the consistent quality of its graduate programs.

Student-Faculty Interaction. To increase the broad interaction of graduate students and faculty, SAS will continue to encourage the establishment of new workshops and colloquia. Successful models now exist in the colloquia offered by many Arts and Sciences departments and by its Program for Assessing and Revitalizing the Social Sciences (PARSS). Through PARSS, for example, selected students may participate in ongoing interdisciplinary seminars, act as seminar recorders, serve as research assistants, or receive dissertation fellowships for work on relevant topics in the social sciences.

Student Research Support. SAS has created a Graduate Education Fund to provide advanced students with special support for travel to professional meetings. It intends to extend this Fund to provide seed money for dissertation projects, and to help students cover the cost of computer expenses, other research equipment and supplies, and travel to archives, libraries, and museums.

Instructional Training. Graduate teaching assistants play an important part in undergraduate instruction. It is essential that they receive adequate training and preparation. The English department currently provides its teaching assistants with training that includes preparatory seminars as well as ongoing supervision by senior faculty. The Romance Languages department offers similar guidance to its TAs. SAS plans to offer such preparation to all Arts and Sciences teaching assistants. It will soon launch a School-wide program which, through a modular group of seminars, will address a variety of basic instructional issues. Not only will such training bring immediate benefits to Penn undergraduates, it will also contribute to the preparation of graduate students for future roles as educational leaders.

Program Length. Too often, students who have completed their coursework lack the financial support necessary to allow them to remain on

campus to finish their dissertations. A significant number take between eight and twelve years to complete their full programs; of recent doctoral graduates, 20 percent took ten years or more. Some students abandon their dissertations entirely under these circumstances and, after having made substantial academic progress, never receive their degrees. SAS will examine numerous options for facilitating rapid student progress through doctoral programs. New regulations, for example, may be instituted toward this end. It is clear, however, that in order to alleviate this problem the School must be able to increase fellowship support for students working on their dissertations. This five-year plan calls for the provision of 100 one-year dissertation fellowships annually by 1992.

Student Information. The SAS student information system is being improved in order to ensure both students and graduate groups access to updated, well-organized data. The enhanced system will facilitate the sharing of information among graduate groups and departments and enable the Graduate Division to gather and maintain detailed data on student progress, from initial admissions inquiry to graduation. The system will thus help the Division give prompt attention to student difficulties and apprise students of potential academic opportunities. In addition, analysis of gathered data will assist Arts and Sciences in planning for the future of its graduate programs.

Job Placement. This is a crucial last step in the provision of graduate student services. In the coming years, the urgency for satisfactory placement will be compounded by an increasing national need for qualified scholars. SAS has set as an objective the establishment of better procedures to help graduate students find appropriate employment both in higher education and elsewhere. The Graduate Education Fund will help students to publish and present papers at national conferences before they graduate. Assistance will be offered, for example, in the preparation of curricula vitae, and guidelines will be suggested to graduate groups for providing students with needed information and support.

4. Lifelong Education

Mission Statement

The mission of the College of General Studies (CGS) is to give substance to the School of Arts and Sciences' belief in the permanent significance of the liberal arts for all citizens. Since its founding in 1894, CGS has demonstrated that the liberal arts and lifelong education are necessary and complementary. By expanding access to our educational programs, we strive to provide learning options for people of all ages, thereby enriching our own teaching and learning.

Toward this end, the College of General Studies organizes its programs with a view to the requirements and constraints of faculty and students. Programs are structured and scheduled to ensure both flexibility and diversity. At the same time, only qualified students and University faculty participate, and CGS academic standards reflect the School of Arts and Sciences' commitment to distinction. All College of General Studies offerings, whether degree programs, professional continuing education, community service, or summer sessions, focus on SAS disciplines.

The College of General Studies also addresses the social and intellectual needs of our urban community and utilizes Philadelphia's unique resources. To carry out its mission within this context, CGS must make concerted efforts to link the University with a number of important constituencies. For example, qualified older students—including retired persons as well as those with career and family responsibilities—should have access to learning opportunities at all levels in SAS. We must also make programs available to our colleagues in the teaching profession—those involved in elementary and secondary as well as post-secondary education. Moreover, the College of General Studies is committed to attracting, supporting, and retaining minority students and to serving the lifelong educational needs and interests of Penn alumni.

The role of the College of General Studies must be adjusted periodically to meet changing demands for non-traditional education. Currently, for example, demand appears to be shifting away from part-time undergraduate study and toward special post-baccalaureate programs. CGS is conducting a formal market study to test the reality of this apparent trend. The results of that study will help CGS reassess its programmatic directions.

The following plan has been formulated in light of the School of Arts and Sciences' current understanding of its strengths and opportunities in lifelong education.

Implementing Programmatic Initiatives

Credit Programs. CGS offers both undergraduate and post-baccalaureate credit programs. Notable initiatives on the undergraduate level include the CIGNA and Colonial Penn programs, through which the College of General Studies provides on-site courses in the arts and sciences to company employees interested in pursuing bachelor's degrees. The growing demand for education within the private sector provides CGS with continuing opportunities to create innovative programs in lifelong education.

CGS is also developing new undergraduate programs in the basic sciences, aimed at preparing qualified minority students for careers in the health care field. These programs will build on the College of General Studies' existing strengths in science instruction, advising, counseling, and health field placement. Planning for this initiative is taking place this year. In succeeding years, CGS plans to enroll, and support through endowed internships, fifty minority undergraduates aspiring to health care positions.

On the post-baccalaureate level, CGS has begun to expand part-time opportunities for non-traditional students. Graduate study in the arts and sciences is no longer viewed exclusively as preparation for academic careers, but also as an important supplement to a variety of other careers and professions. The College of General Studies now offers special programs to prepare students with bachelor's degrees in other areas to enter medical or business school. These high-quality pre-health and pre-business programs have proven extremely successful.

The School of Arts and Sciences' five-year plan calls for the establishment of a Graduate Division for Continuing Education that offers part-time, non-traditional master's degree programs like the currently offered programs in Liberal Studies, Social Gerontology, and Arts and Professional Studies. This Division would serve the diverse interests of the many well-educated young professionals who are now choosing to pursue a graduate liberal arts education. A faculty committee will be appointed to recommend the appropriate content and administrative structure for such programs.

Summer Sessions. CGS administers the Summer Sessions for the benefit of the University community and off-campus constituencies. While continuing to offer summer teaching opportunities to its faculty, SAS intends to increase the number of non-Penn students in the Summer Sessions. SAS Summer Study Abroad programs, which have grown by over 200 percent in the past five years, will also seek increased participation by students from other outstanding colleges and universities. Finally, the Pre-College program, which draws exceptional high school juniors from throughout the country, will be extended to include about 200 students annually.

Non-credit Programs. The College of General Studies offers a variety of non-credit programs that serve the general public, including gifted children, speakers of English as a second language, working professionals, and senior citizens.

CGS also offers three-to-four-day seminar programs for Penn alumni. These are thematically structured and based in pertinent locations (a Chicago program will focus on urban architecture and the Prairie School; a program in New Orleans looked at jazz and the development of the American city). CGS plans to expand its informal educational services to Penn alumni throughout the country; it wants, in particular, to provide increased access to educational opportunities for young alumni. CGS will explore, for example, the feasibility of making substantive programs and lectures available to alumni through the use of communication tools such as video cassettes.

Service Programs. Through the College of General Studies, SAS administers the Institute for International Education of the Pennsylvania Council for International Education (PaCIE). This Institute, funded by the Department of Education, provides guidance and mini-grants for Pennsylvania and Delaware Valley colleges and universities interested in strengthening their international perspectives. CGS will continue to stress the value of this and similar outreach programs.

The College of General Studies will also continue to offer service programs for arts and sciences educators at all levels. Current programs include the Delaware Valley Faculty Exchange, the NEH Summer Institutes, the Rockefeller Fellowships for Secondary Teachers, the Institute for International Education, and the Penn Educational Resource Center. CGS reinforces its commitment to linking teachers of arts and sciences

subjects, from secondary through graduate schools, through collaborative, discipline-based programs.

Implementing Administrative Initiatives

Physical Space. If part-time students are to develop a sense of belonging to the School of Arts and Sciences, they must have a dedicated place to meet and study on campus. SAS is now exploring the possibility of consolidating all College of General Studies components and creating a new CGS student lounge as part of a general Logan Hall renovation process (see *Physical Plant and Facilities*, pages XI-XII).

Automation. The diversity of CGS's many programs creates a unique administrative challenge. It is now beginning to implement a Student Information system that will allow the College of General Studies to maintain, access, and analyze complex student data with ease. This new system will facilitate student advising as well as program planning and

development, and allow for extensive data-sharing with other SAS administrative offices.

Student Financial Support. As academic costs escalate, support for part-time students becomes more and more vital. The current trend toward increased required borrowing will be likely to dissuade many potential part-time students from study in the arts and sciences. Exceptional students must be able to participate in CGS programs without undue financial stress. The College of General Studies will continue to cooperate with employers, such as CIGNA and Colonial Penn, who support the educational pursuits of their employees, and to engage in fund drives for such existing resources as the Senior Associates Scholarship and the Bread Upon The Waters Scholarship Fund. It hopes, at the same time, to establish additional scholarship funds for students interested in, for example, secondary school teaching of arts and sciences disciplines.

II. Supporting Goals

1. Management and Efficiency

School-wide distinction can only be achieved in an environment of effective management. SAS will continue to accelerate efforts to optimize existing resources and rationalize internal procedures. While much of the responsibility lies at the departmental level, emphasis is being placed on ensuring that departments receive the information, training, support, and incentives necessary to fulfill their management goals.

A high priority is to increase self-awareness through advanced methods of data collection and analysis. Such understanding is essential if informed management decisions are to be made. The School will continue to work closely with the central administration to design new information systems that facilitate this process.

These systems will also make it possible to disseminate timely and comprehensive information to faculty, staff, and students, and will help increase staff efficiency. They will only be effective, however, if implemented in conjunction with a concerted investment in human resources. Arts and Sciences plans to build pertinent training and development opportunities for faculty with managerial responsibilities and for staff.

At the same time, the School will provide appropriate central support services, and establish administrative and academic incentives, to encourage active faculty and staff participation in efforts to reach its five-year goals. It will also take new measures to ensure that management policies are based on a thorough understanding of existing resources.

Information Systems

SAS is now in the process of building and expanding several major information systems for the collection, storage, and analysis of data. These systems will be of use to academic departments as well as administrative units.

The School's new College Information Management System (CIMS) is an on-line automation system that provides instantaneous access to a full range of student academic data. CIMS makes it possible for College Records and Advising Office staff to show students their academic records and to revise them automatically—it thus eliminates the need for excessive paperwork, simplifies transactions, helps keep students informed of their standing, and facilitates the advising process. At the same time, the College utilizes CIMS to gather and organize large quantities of data that, before automation, would have been excessively unwieldy. These data are useful both for tracking the progress of individual students and for long-range planning and analysis. Soon CIMS will be expanded to reach undergraduate advisors in academic departments and student residences.

Using CIMS as a model, SAS is developing information systems for both the College of General Studies and the Graduate Division. These will be customized to meet the special needs of each. For example, the system in CGS will allow for the tracking of students by program; that in

the Graduate Division will permit direct dissemination of information to graduate groups.

In conjunction with the Dean's office, SAS departments are also building information systems. Eight are now establishing computerized space inventories and faculty personnel systems, and are beginning to use electronic spreadsheets to manipulate budget data from the mainframe computer. Once systems and procedures have been finalized, they will be adopted by the other departments as well. This process should be completed by FY 1988.

Collection and Analysis of Data. The College Information Management System and its counterparts in the College of General Studies and the Graduate Division offer multiple benefits in this regard. For example: the detailed and accurate information provided through the CIMS system will be used widely in curricular and admissions planning as well as for the advising and tracking of individual students; data collected and organized through the College of General Studies Information System will assist CGS in identifying student needs and re-defining its role in view of the changing circumstances surrounding lifelong education; and the Graduate Division's system will facilitate data-sharing with peer institutions and help the Division identify admissions patterns and goals.

SAS is also involved in other efforts to improve the ongoing administrative data-collection process.

- *Creating a master list of SAS courses.* This list will help in the tracking and planning of course offerings.
- *Expanding use of course evaluations.* SAS will make these evaluations through which information on teaching effectiveness and course popularity is currently gathered—available to committees responsible for faculty promotion and tenure decisions.
- *Establishing electronic files containing comprehensive faculty data.* These, along with departmental files, will prove a vital resource for both management and publicity purposes. A file containing faculty vitae is already partially completed.
- *Developing new systems for the collection of comparative data.* SAS is working with peer institutions to develop new systems that will enhance current efforts to assess its standing in relation to other colleges and universities nationwide.
- *Improving budget-planning capacity.* The School has enhanced its budget planning capacity, creating a versatile budget planning model. This model is now being used by the Dean's Office and will eventually be made available for departmental use. SAS has also developed a system that makes possible the production of comprehensive monthly budget reports for the Dean's review.

Communication. One of Arts and Sciences' goals is to expand its information systems to link together administrative and academic departments. It is hoped eventually to encompass student residences as well. Such direct communication would permit the instant relay of documents and messages among faculty, staff, and students, eliminate the need for many existing administrative procedures, and allow academic departments immediate access to data needed for planning and

analytic purposes.

Staff Efficiency. Once in place, new information systems reduce paperwork and increase the speed with which staff can access and manipulate data, thus enabling them to focus on more creative activities. These systems also help the School gather the information needed to identify areas in which additional staff or training are required.

Providing Opportunities for Training and Development

Faculty in Managerial Roles. Undergraduate, graduate, and department chairs all carry significant management responsibility. Yet faculty in these positions frequently learn about management only by managing. SAS plans to offer faculty managers the opportunity to participate in instructional seminars and to provide them with handbooks and other printed resources designed to help clarify their managerial responsibilities and identify available support.

Staff. The success of the Arts and Sciences enterprise rests heavily on the efforts of professional, research, and support staff. The School will continue to encourage staff to take part in training activities sponsored by the University and programs offered through the College of General Studies, and to foster the development of their technological skills. To help ensure explicit procedural standardization, SAS will develop handbooks for department business managers. Also being explored are new ways to help staff build suitable careers within SAS, by, for example, creating formal links between the training and promotion processes.

Building Support and Incentives

Support. The Dean's Office is planning to provide faculty and staff with several new centralized services. It will, for example, create a center for desk-top publishing that will enable departments, research centers, and administrative units to print professional-quality documents. This facility's advanced equipment will quickly produce such items as handbooks, flyers, reports, and prospectuses for both internal and public distribution. The School will also establish a Teaching Resource Center (see *Graduate Education*, pages VIII-IX) to help prepare TAs for instructional responsibilities, and a facility to aid faculty in the production of grant proposals (*Research and Scholarship*, pages IV-V).

In addition, financial support will be offered for decentralized initiatives. School funds will foster graduate groups' recruitment activities (*Graduate Education*, pages VIII-IX) and the development of innovative programs in undergraduate education (*Undergraduate Education*, pages V-VII).

Incentives. Arts and Sciences' five-year plan includes the establishment of the following incentives to encourage efficient space and budget management, increased emphasis on undergraduate education, ongoing interdepartmental collaboration, and continued procurement of external funds:

- a system that allows departments to trade unused space for other commodities, such as equipment;
- a mechanism for returning to departments a percentage of their previous year's savings;
- increased emphasis on teaching effectiveness as a criterion for awarding faculty promotions and tenure;
- an agreement to buy time from departments whose faculty participate in interdisciplinary courses;
- an agreement to return to departments a set percentage of grant overhead costs once these have exceeded a predetermined limit.

Resource Management

In order to develop useful management policies, it is particularly important to maintain a comprehensive understanding of existing School resources. To this end, SAS will

- conduct periodic reviews to ensure the rational allocation of current expense funds;
- regularly examine departmental support staff use and needs;
- analyze the intersection of departmental missions in order to promote the coordination of departments with common goals;
- regularly examine course enrollments, bearing in mind the varied nature of pedagogical purposes and needs;
- examine use of teaching assistants, adding TA allocations for departments with significant instructional need and considering alternative forms of graduate student support for others;
- design a comprehensive personnel tracking system that will illuminate changes in full- and part-time personnel distribution.

2. Physical Plant and Facilities

Adequate space and modern equipment and facilities are prerequisite to the recruitment and retention of first-rate students and faculty. If SAS is to fulfill its goals, it must modernize teaching and research laboratories, improve office and classroom space, increase the number of classrooms of certain critically needed sizes, and implement a coordinated plan for incorporating new computer and audio-visual technologies.

Modernizing and Maintaining the SAS Physical Plant

Improving Existing Facilities. SAS will enhance existing facilities for several key purposes: to physically consolidate currently dispersed SAS components, improve classroom space and equipment, ensure appropriate office space for programs and faculty, meet changing technological demands, and increase energy efficiency. A plan will also be developed for the regular maintenance of all SAS buildings—with 22 buildings in use, the School is experiencing serious maintenance problems, some of which impede research and instructional activities. The following have been identified as the School's most pressing major renovation needs*:

Improve the Chemistry Complex.—The age of Arts and Sciences' Chemistry facilities, as well as changes in the way that chemistry is taught and modern research is conducted, create an urgent need for substantial rehabilitation. The continued development of a distinguished Chemistry faculty cannot take place without the creation of additional research space; at the same time, in order to ensure both the safety and high quality of chemistry instruction in Arts and Sciences, undergraduate labs must be renovated.

Renovate Logan Hall.—Logan contains the administrative offices of the College and the College of General Studies, as well as the Audio-Visual Center (AVC) and other classrooms and offices. This building, which dates from 1874, is in sore need of internal and external repair. SAS plans to renovate Logan to improve its overall condition and to transform it into an all-SAS building. It would then comprise the College Office, all CGS offices, the AVC, and the departments of Philosophy, Folklore and Folklife, and Religious Studies.

Renovate Bennett Hall.—Built in 1925, Bennett houses Penn's highly regarded English department as well as several other University offices, and serves as an instructional facility with over twenty-four classrooms. It suffers from problems caused by deferred maintenance and is in need of substantial internal and external repair. Rehabilitation will enhance classroom space as well as faculty and administrative offices.

Building New Facilities. Three new buildings are planned to provide long-needed facilities for some of the School's most prominent departments; one will be a particularly important asset to the University as a whole:

A Psychology and Social Science Building.—The facilities utilized by the Psychology department, which is considered to be one of the top five in the nation, hardly measure up to its stature. Psychology is now dispersed among four separate buildings, with no unified office and classroom space. The department needs both consolidated office space and new classrooms in close proximity to existing labs. The SAS plan calls for the construction of a new building to alleviate this problem. A potential location for this building is on Locust Walk, where the Bookstore currently stands.

A Music and Humanities Building/Concert Hall.—Arts and Sciences also plans to construct a new building that would include a large concert hall (800-1000 seats), a multi-purpose concert hall (250-300 seats), Music classrooms and faculty offices, listening and practice facilities, plus space for another humanities department. This building would provide Music faculty and students, as well as the Theater Arts program, with badly needed space and facilities for instruction and performance. It would, at the same time, benefit campus performance groups and serve as a major cultural resource for the entire University and surrounding community. This building might be situated across from the Annenberg Center at 36th and Walnut Streets.

A Science Complex.—SAS plans to construct, possibly on the current parking-lot site east of the David Rittenhouse Laboratory (DRL), a new

* Except for the Chemistry Complex renovations, for which planning is well underway, the building and rehabilitation projects listed in this section are in the early planning stage and are thus presented in no particular order (see Appendix A). Cost estimates are preliminary and highly subject to change.

building to provide needed space for four natural science departments. This Complex will contain a library to serve Mathematics, Physics, Astronomy, and Geology, plus a critically needed large auditorium (400 seats), a number of smaller classrooms and seminar rooms, Mathematics department offices (currently in DRL), and several levels of parking. SAS will simultaneously renovate the David Rittenhouse Laboratory, which will house the departments of Physics, Astronomy, and Geology. This complex will go far to meet the space requirements of these departments, and, at the same time, help foster their ongoing interaction.

It should be noted that several existing SAS facilities will be relinquished as these new ones are built: the Psychology department will vacate three of the four buildings it now utilizes; the Music department will exchange its old building for the new; and Geology will no longer occupy space in Hayden Hall. Thus, Arts and Sciences' net space gain will be relatively modest, though the quality of its facilities will be significantly improved.

Altogether, these renovation and construction projects will require over \$110 million. SAS intends, within the next five years, to raise the funds necessary to begin implementation, and to establish a Task Force on Space Planning to clarify project details. The successful completion of Arts and Sciences' five-year plan requires the fulfillment of all of these objectives for the improvement of the SAS physical plant.

Enhancing Technological Resources

Technological advances affecting the way that information is collected, analyzed, transmitted, displayed, and stored will continue to change the research, instructional, and administrative environment of the University. If SAS is to offer faculty and students the benefits of these rapidly developing technologies, it must enhance facilities, develop computer networks, and provide adequate user training and support. The School must also be able to provide all interested faculty with their own computers, and to acquire new hardware and software as needed. SAS is now developing long-range plans to meet these technological needs. The following discussion reflects current thinking based on preliminary planning efforts and, hence, is subject to change.

Research Computing. Computing is central to the School's entire research enterprise. Computers assist in a full range of research activities—from data analysis in the natural and social sciences to text, image, and sound processing in the humanities. They also dramatically facilitate such essential tasks as document preparation and data communication.

Approximately 25 percent of all Arts and Sciences faculty members now have personal computers. SAS intends to supply them to all interested faculty and to accelerate efforts to provide faculty, especially new users, with computer consulting, training, and staff support. At the same time, in the interest of compatibility and efficiency, the School will coordinate the acquisition of minicomputers to be used for research purposes. It is also considering the possibility of upgrading its centralized mainframe facility to support vector processing.

SAS will continue to support the Center for Computer Analysis of Texts in its efforts to provide leadership in the area of humanistic research computing both within the University and nation-wide, and in facilitating the integration of computer-assisted research into the traditional functions of such resources as the University Library and Museum.

Instructional Computing. Computer literacy is becoming an important curricular concern. Graduate students must build general and discipline-specific computer skills as they prepare for future roles as scholars and teachers. Similarly, whether they plan to enter graduate school or to seek employment after graduation, undergraduates must develop computer skills. The instructional impact of this technology, however, extends far beyond the study of the computer itself. For example, computers are now being utilized by Arts and Sciences faculty in the development of proficiency-based foreign language courseware, and by Penn students in the development of writing skills. Computers offer unprecedented instructional potential for both classroom and individualized learning.

In order to make full use of this potential, faculty must have available the services of trained staff to assist in the creation, integration, and utilization of computer-based instructional materials. The School of Arts and Sciences will focus on increasing such support, and explore the potential role of graduate students in helping to fill this need.

SAS now has over fifteen instructional computing labs, ranging from

the Writing Lab in Bennett Hall to the social science labs in the McNeil Building to the mathematics facilities in David Rittenhouse Laboratory. These will be enhanced and expanded as needed.

Audio-Visual Technology. In the past, audio-visual technology was utilized primarily by language departments. Now it has expanded to include many instructional tools useful to all disciplines. With this in mind, an Audio-Visual Advisory Committee was appointed to examine the role of the SAS Audio-Visual Center (AVC). This committee, composed of faculty from six Arts and Sciences departments, submitted its recommendations on Center budgeting, governance, and service in May, 1986.

Noting the widespread demand for audio-visual equipment and support, the committee recommended that the role of the Center be expanded and its procedures restructured in order to enhance service and make equipment more readily available to faculty and students.

Plans for the Audio-Visual Center include the development of training programs for faculty and staff in the use of AVC equipment, as well as periodic seminars on new technological developments. As part of its new, broader responsibilities, the AVC may also manage the School's central facility for satellite reception of foreign language broadcasts (see *Undergraduate Education*, pages V-VII). The Center is also considering the establishment of AV equipment stations in main SAS classroom buildings, the allocation of basic equipment to departments with records of high usage, and the creation of one or more video labs for faculty and student use.

A Faculty Policy Committee will be appointed to advise the Center's Director. Special efforts will be made to ensure that the acquisition of new audio-visual equipment is coordinated with that of other equipment campus-wide in order to prevent duplication and incompatibility.

Establishing Networks. By linking resources to one another we optimize their benefits. Computer networks, in particular, provide two significant advantages. First, they increase the power of existing workstations; second, they facilitate rapid communication both within the University and between Penn and outside resources. Connections currently exist between SAS units and its central mainframe facility. These must be supplemented, however, with comprehensive networks that encompass mainframe, minicomputer, and personal computer resources.

PennNet, a system that will make possible the broad linkage of University components and provide general access to outside mainframes, minicomputers, and other networks, is now being installed. In order for SAS to utilize this system, however, networks must be established within the School. SAS is planning to link faculty members' personal computers through departmental Local Area Networks (LANs), which will, in turn, be connected to the PennNet system. Graduate students will also have direct access to their departments' LANs through personal computers. Undergraduates will be linked to both faculty and graduate students through the undergraduate computer labs. The Local Area Networks will also be designed to allow the easy transfer of information between academic and administrative offices. A particularly notable advantage of these networks is their ability to provide faculty and students with electronic access to the Library's catalogue and database systems.

In order to provide the best possible service and utilize networks most efficiently, SAS will work toward standardizing certain computing procedures. The SAS Computer Advisory Committee will serve as an important mechanism in this process. It may also be desirable to appoint a committee composed of primary users to assist in this and other computer-system decision-making processes.

Coordination

The continued effectiveness of Arts and Sciences' facilities and physical plant depends upon comprehensive coordination within both the School and the University as a whole. The nature of the new technologies, as well as persistent economic constraints, demand judicious examination of both present implications and future needs as networks are developed, equipment is acquired, and buildings are refurbished and constructed. The soon-to-be-appointed Task Force on Space Planning will be charged not only with the task of developing detailed plans for projects already identified, but also with the responsibility of completing the analysis of Arts and Sciences' overall space needs. The School will also establish other mechanisms to ensure careful planning and ongoing communication.

III. Fiscal Status

The following is meant to provide a broad overview of the fiscal status of the School of Arts and Sciences over the past five years, and a general sense of its projected standing through the next. The past five years are reviewed first, in terms of enrollment, faculty and staff, and finances. These same three categories then provide the framework for the discussion of the years to come.* Projections presented on page XVI and following are based on current trends, and do not take into account potential major increases in, for example, development income.

1. The Past Five Years: FY 1982 - FY 1986

Enrollment

Shortly after the formation of the School of Arts and Sciences in 1975, the trend toward preprofessionalism among college students across the country and the lack of available positions in most scholarly disciplines resulted in a national reduction in enrollments in the liberal arts and sciences. At the same time, the national pool of eighteen year olds began to shrink. Despite these trends, undergraduate enrollments in SAS remained steady, and student quality improved. This can be greatly attributed to an aggressive recruitment program by the University's Office of Admissions, the increasing quality of the undergraduate programs offered by the School of Arts and Sciences, and the special opportunities afforded undergraduates at Penn.

The College of Arts and Sciences. Student enrollments in the College have remained essentially stable over the past five years; however, the number of undergraduate course units taught decreased from 50,677 in FY 1982 to a low of 49,848 in FY 1985, then increased again to an all-time high of 50,843 in FY 1986. (See Table 1) Much of the reason for the decrease was that College students were taking more courses in Wharton, the School of Engineering and Applied Sciences (SEAS), the College of General Studies, Annenberg, and the Graduate School of Fine Arts. This trend has begun to change. College enrollments in CGS have decreased by 37.1 percent over the past five years, mainly because of SAS efforts to reduce duplication of courses in the College and CGS when neither course is at its capacity enrollment. The bulk of College enrollments in SEAS had been in Computer Science Engineering. With more students entering the College with some degree of computer literacy, and with the introduction of some SAS computer-intensive courses, College student enrollments have, to a significant extent, shifted back to SAS. College enrollments in Wharton continue to grow, though at a slower pace than before. Meanwhile, undergraduates from outside of SAS have continued to show considerable interest in Arts and Sciences offerings.

Table 1: SAS Course Enrollments FY1982 - FY1986

	FY1982	FY1983	FY1984	FY1985	FY1986
Undergrad	50,677	50,370	50,363	49,848	50,843
Graduate	8,191	7,337	7,514	7,848	7,839
CGS	11,676	11,449	10,589	10,168	11,485

College student enrollments in some of the University's graduate and professional programs have, however, been on the rise. College enrollments in the Graduate School of Education have grown by 58.2 percent, from 619 in FY 1982 to 979 in FY 1986. In most cases, GSE courses are

taken by College students submatriculating for a master's degree in Education. In the Graduate School of Fine Arts, College enrollments rose from 928 in FY 1982 to 1168 in FY 1986 (25.9 percent). College enrollments in Annenberg increased by 39.6 percent, from 709 in FY 1982 to 990 in FY 1986, accounting for 67.3 percent of total Annenberg enrollments.

The Graduate Division. The Graduate Division has seen more dramatic changes in enrollment over the past several years than has the College. In the late 1970s and early 1980s, many SAS graduate groups intentionally reduced the size of their graduate student bodies—with poor prospects for academic positions, students were disinclined to enter scholarly professions. As a result, graduate course units taught in Arts and Sciences decreased from a high of 9,904 in FY 1976 to a low of 7,337 in FY 1983.

The number of SAS graduate course units taught in FY 1986, however, rose slightly to 7,839. This may well be an early reflection of new student interest in Ph.D. programs in the arts and sciences.

The School has recently introduced two new graduate programs; both represent potential areas of growth in Arts and Sciences. In FY 1985, the University initiated a joint MA/MBA program in International Studies and International Business involving SAS and the Wharton School, under the auspices of the newly established Lauder Institute. While the program itself has relatively few students (50 in each of two classes), it reflects Arts and Sciences' commitment to a cross-disciplinary, international perspective on research, scholarship, and education.

A second program, Liberal Studies, which was transferred to SAS in FY 1985, is a non-traditional, interdisciplinary, part-time master's degree program for professionals. Its faculty, drawn from Schools across the University, teach on an overload basis in their areas of interdisciplinary interest. The Liberal Studies Program, with approximately 300 students taking 800 course units each year, accounts for a large portion of the increase in Special Programs tuition income from \$640,000 in FY 1982 to \$1,587,000 in FY 1986.

The College of General Studies. While the decline in Graduate Division student enrollment has leveled off, the student population in the College of General Studies has continued to decrease over the past five years. CGS student headcount dropped from 1,688 in fall 1981 to 1,302 in fall 1985, and CGS academic year course units taught decreased from 8,181 in 1981-82 to 5,648 in 1985-86. The drop in course units is partially explained by the decrease in College enrollments in CGS, from 3,781 in 1981-82 to 2,380 in 1985-86. That decrease resulted directly from efforts to reduce unnecessary duplication of courses between the College and CGS. It is also the case, however, that total CGS academic year student enrollments decreased from 5,044 in FY 1982 to 4,329 in FY 1986 (14.2 percent), CGS student enrollments in CGS courses dropped from 2,777 in FY 1982 to 2,295 in FY 1986 (17.5 percent), and CGS student enrollments in SAS dropped from 1,311 in FY 1982 to 1,173 in FY 1986 (10.5 percent).

While academic year CGS enrollments have declined, increased enrollments in summer sessions (administered by CGS) have resulted in slight growth in CGS enrollments overall, from a low of 10,168 in FY 1985 to 11,485 in FY 1986. (Table 1) Preliminary analysis for FY 1987 seems to indicate as well a slight increase in academic year CGS enrollments.

It should be noted here that despite the decline in its enrollments, the College of General Studies continues to be a financial asset for SAS. Because of the nature of the CGS teaching staff, staff expenses can be reduced as demand, and income, decrease. It is also the case that CGS has introduced several innovative non-credit programs that present

* This analysis does not attempt to be entirely comprehensive. For the sake of simplicity, it focuses on the unrestricted budget. Restricted funds (those from endowments, grants, and contracts that can be used only for specifically designated purposes) have not, for the most part, been considered.

opportunities to the School.

The CGS population taking courses for credit has not only fluctuated in size, but has also changed in nature over the past several years. More and more CGS students are seeking some form of post-baccalaureate study, whether as preparation for graduate professional study in medical areas or business, or on a part-time basis in one of the SAS graduate groups.

Faculty and Staff

The number of Standing Faculty in Arts and Sciences has remained stable over the past five years (511 at the outset of FY 1982 and 510 at the beginning of FY 1986, see Table 2). It is noteworthy that tenure density over this period also remained stable (just under 75 percent).

Secondary and Adjunct Faculty (under "Associated and Teaching Staff" in Table 2) include faculty from other Schools, and individuals from other institutions who teach at AS on a per-course basis. The majority of lecturers in SAS are part-time and function as special instructors in selected areas, or as supplemental faculty in high-demand disciplines. Because of the varied nature of the terms and responsibilities of these positions, the numbers of faculty listed under this category can be misleading. Appendix G, however, which shows dollars spent on Secondary and Adjunct Faculty, indicates that financial commitments in this area, in relation to overall expenditures, have remained stable over the past five years.

The number of Teaching Assistantships in Arts and Sciences has remained relatively stable during this same time period. The apparent fluctuation in number of TAs between FY 1982 and FY 1986 is due to the fact that both full and half assistantships are awarded in varying proportions from year to year, yet headcounts do not reflect this distinction—here, all Teaching Assistants are tallied equally.

SAS depends heavily on the services of many full- and part-time Associated Research Staff, who are supported nearly 100 percent by restricted funds from grants and contracts. The numbers of these staff have remained fairly constant over the past five years.

The Professional and Administrative (A-1) staff in SAS grew from 163 in FY 1982 to 198 in FY 1986 (21.5 percent). The addition of 12 staff members to administrative offices was required by increasing demands for support in academic computing, SAS development, and new program administration; the majority of the 23 staff hires in academic departments were made in research administration, to fulfill the duties associated with increased grant support.

The size of the School's Clerical and Secretarial (A-3) staff and Permanent Part-Time Support (A-4) staff has remained relatively stable.

Finances

Despite severe problems inherent to the structure of its budget that render effective financial planning extremely difficult, the School of Arts and Sciences has remained fiscally responsible over the past five years. It has managed to avoid a deficit through careful management in every year except FY 1983, when a small deficit occurred (Table 3). It is becoming increasingly difficult, however, to balance the budget. SAS lacks the fiscal flexibility needed to respond to special opportunities, initiate new programming, provide adequate support to existing initiatives such as research centers, or supply appropriate funds to faculty for research and travel. Effective fiscal planning is also hampered by the following long-term obstacles:

- an ever-increasing dependence on faculty leaves to balance the budget, which jeopardizes the School's ability to provide adequate leave replacements;
- a slowing rate of increase of University subvention support*—narrowly defined;
- steadily rising allocated costs for centrally provided services;
- a lack of investment income due to an exceptionally low endowment fund;
- a growing dependence on tuition increases to cover expenditures;
- lack of control over funds designated for student financial aid, which account for one-fifth of the School's expenditures.

Unrestricted income. Special fees and tuition ("SF and Tuit" in Figure 1) continue to be dominant elements of the School's income, representing

Staff Category	Academic Year				
	1982	1983	1984	1985	1986
I. Academic Staff					
A. Standing Faculty					
Professors	268	266	267	269	269
Associate Professors	116	115	112	113	115
Assistant Professors	127	136	140	125	126
Total Standing Faculty	511	517	519	507	510
Total Tenured Faculty	379	377	378	380	381
B. Associated and Teaching Staff					
Emeritus	3	4	5	4	5
Secondary/Adjunct/Visitors	46	48	40	37	44
Lecturers	190	232	227	225	204
Teaching Assistants	544	528	551	527	531
Total Associated Staff	783	812	823	793	784
C. Associated Research Staff (funded through external grants and contracts)					
Total Research Staff	53	58	55	55	50
Total Academic Staff	1,347	1,387	1,397	1,355	1,344
II. Administrative Staff					
A. Prof./Admin**	163	165	169	173	198
B. Support Staff	243	231	235	245	248
C. A-4 Staff	14	17	20	16	18
Total Administrative Staff	420	413	424	434	464
Total Staff	1,767	1,800	1,821	1,789	1,808

* These headcount figures include many part-time staff, especially in the Associated and Teaching Staff category.

** The growth by 35 over the five year period included 23 staff members in the academic departments (supported by grants and contracts) and 12 staff members in central SAS units (most in SAS Computing, SAS External Affairs, and the College of General Studies).

70.0 percent of unrestricted income in FY 1982 and 71.5 percent in FY 1986. Undergraduate tuition ("U Tuit") represents the greatest portion of tuition income. It grew by 43.3 percent from FY 1982 to FY 1986, though the size of the undergraduate student body remained essentially constant.

Graduate tuition ("G Tuit") comprises a significant portion of Arts and Sciences' total unrestricted income, 10.0 percent in FY 1986. Higher tuition rates caused this income to increase from \$5.592 million in FY 1982 to \$7.948 million in FY 1986, despite the decrease in enrollments.

The biomedical graduate groups (13 groups with a total of 354 students) moved from the SAS Graduate Division to the School of Medicine in the spring of 1986. That move did not affect the number of course units taught by SAS, since biomedical students have always taken most of their courses in the University's three medically related Schools. It did, however, increase considerably the School's overall costs for graduate student financial aid. Due to the nature of the University's accounting system, the Graduate Division of SAS had to absorb approximately \$300,000 in student aid expense that had formerly been paid primarily by the School of Medicine.

Tuition income from special programs (included in Figure 1 under "SF and Tuit") has experienced considerable growth over the last five years (148.0 percent). To a great extent, this can be attributed to the addition of Liberal Studies to SAS in FY 1985. Declining enrollments, however, account for the fact that income from CGS rose by only 12.2 percent from FY 1982 to FY 1986.

Indirect cost recovery ("Cost Rec" in Figure 1), another important element of unrestricted income, increased from \$4.324 million in FY 1982 to \$5.712 million in FY 1986 (32.1 percent). Because its rate of growth was slower than that of tuition income, indirect cost recovery dropped from 7.7 percent of total unrestricted income in FY 1982 to 6.2 percent in FY 1986. Total dollars awarded to faculty increased by 62.3 percent over the five-year period and 17.8 percent from FY 1985 to FY 1986 alone.

The School of Arts and Sciences depends heavily on University subvention ("Subv" in Figure 1), which represents one-fifth of SAS unrestricted income. Subvention income, however, has not grown at as high a rate (36.1 percent) as tuition and fees income (44.8 percent). As a result, subvention, which represented 21.1 percent of unrestricted income in FY

* The subvention fund is derived from a tax on tuition and certain types of restricted income. The Provost reallocates this fund to University Responsibility Centers as deemed appropriate.

1982, dropped to 20.3 percent in FY 1986. It should be noted here that the payment of graduate student fellowships to SAS graduate students from the Provost's funds—in reality another form of subvention to SAS—is not included in the above figures. Those increased by 87.7 percent from FY 1982 to FY 1986, from \$886,000 to \$1,730,000; in FY 1986, an additional \$532,000 was designated for research assistantships. Taking these funds into consideration, the SAS subvention growth rate over the past five years comes to 44.4 rather than 33.0 percent, and subvention's

share of unrestricted income rises to 22.7 percent in FY 1982 and 23.1 in FY 1986.

Restricted Income. Restricted income made up 31.8 percent of Arts and Sciences' total income in FY 1982 and 33.4 percent in FY 1986. Direct cost recovery ("Dir Cost Rec" in Figure 1) from sponsored programs was responsible for the bulk of restricted income (63.4 percent in FY 1982 and 60.3 percent in FY 1986). Sponsored program income increased by 41.1 percent over the past five years, and by 21.7 percent from FY 1985 to FY 1986 alone.

Restricted income from gifts rose by 56.0 percent from FY 1982 to FY 1986, with the largest increase occurring between FY 1985 to FY 1986 (\$1.129 million or 26.3 percent). Investment income growth was much slower, rising by 20.5 percent from FY 1982 to FY 1986 and representing 6.8 percent of restricted income in FY 1986.

Sales and services income, derived for the most part from service center budgets, accounted for 16.8 percent of the School's restricted income in FY 1986. Service centers include such units as the SAS Computing Center, SAS Audio-Visual Center, machine shops, and duplicating centers, all of which operate primarily through the internal transfer of funds. Service centers, however, also receive partial funding through external grants and contracts.

Unrestricted Expense. Total unrestricted expense increased by 42.3 percent from FY 1982 to FY 1986 (Table 3). The major components of expense—compensation ("Tot Comp" in Figure 2), allocated costs ("Alloc Cost"), and student aid ("Stu Aid")—all increased at about the same rate; their proportions of the expense budget have thus remained fairly constant. Only current expense ("Curr Expns") has shown any real growth in budget share, increasing from 5.3 percent in FY 1982 to 8.2 percent in FY 1986.

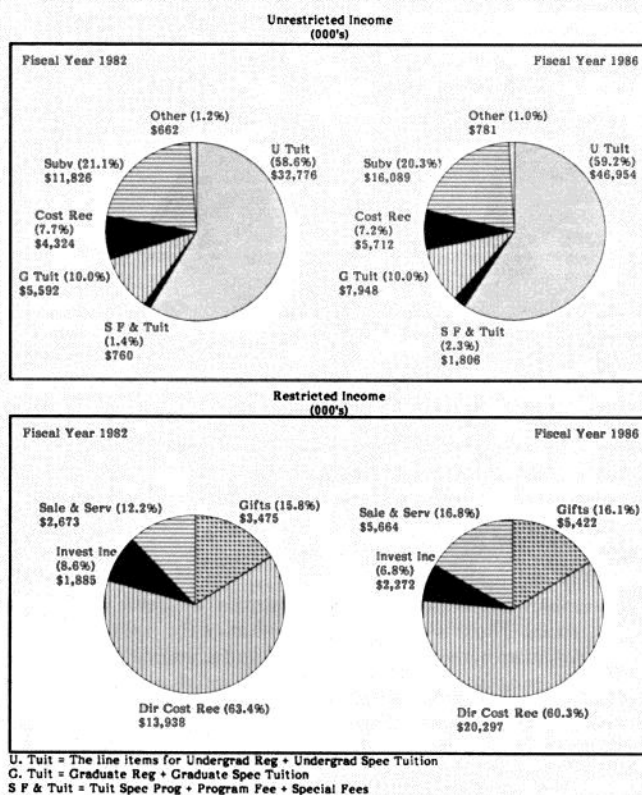
Compensation is the School's largest expense element (46.2 percent), with faculty salaries accounting for 67.0 percent of total salary expenditures (Table 3). While overall faculty salary costs have grown modestly, the School of Arts and Sciences has made a concerted effort to increase the salaries of standing faculty at a higher rate, particularly in the last two years, in order to remain competitive. Still, SAS faculty salaries remain below the average salaries of their colleagues at peer institutions.

Allocated costs constitute a significant portion of total unrestricted expense (24.3 percent in FY 1986, Figure 2). Beginning in FY 1987, the addition of the University Library as an item of allocated cost will raise

Table 3
SAS Outline Budget for FY 1982-FY 1986

Arts and Sciences Unrestricted (thous of dollars)	FY1982	FY1983	FY1984	FY1985	FY1986
I. Direct Revenues	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL
Tuition					
Undergrad Reg	28,327	33,453	36,423	39,253	41,900
Less Stud Aid	(7,861)	(9,882)	(10,556)	(11,243)	(12,047)
Net Undergr Reg	20,466	23,571	25,867	28,010	29,853
Undergrad Spec	4,449	4,867	4,930	5,185	5,054
Graduate Reg	5,093	5,212	6,118	6,845	7,450
Graduate Spec	499	452	394	593	498
Total Tuition	30,507	34,102	37,309	40,633	42,855
Tuit Spec Prog	640	618	618	1,026	1,587
Program Fee					
Special Fees	120	193	166	181	219
Invest Income	316	360	351	389	421
Gifts	177	190	179	161	125
Ind Cost Recover					
Endowments	292	298	344	390	440
Sponsored Prog	3,939	3,950	4,317	4,461	5,206
Other Rest Fds	93	207	143	170	67
Tot Ind Cost Rec	4,324	4,455	4,804	5,021	5,712
Sales & Services	28	30	32	34	43
Other Income	141	160	179	199	192
Total Dir. Revenues	36,254	40,108	43,638	47,644	51,154
II. Gen Univ Subvent				0	219
Program Spec					
Mudd Debt Serv					
Program Reg	8,846	10,131	11,533	11,649	13,700
Stud Fin Aid	2,980	2,142	2,177	2,170	2,170
Tot Gen Univ Sub	11,826	12,273	13,710	13,819	16,089
III. Bank Transaction	18	20	18	(103)	0
Total Revenues	48,098	52,401	57,366	61,360	67,243
IV. Direct Expend					
Salaries & Wages					
Academic	18,687	16,147	16,737	18,198	19,741
Admin	1,873	2,172	2,254	2,360	2,596
Clerical	1,745	1,886	1,950	2,089	2,247
Service	344	387	101	111	99
Limited Serv		1,362	1,819	1,738	1,783
Stipends TA/RA		2,708	2,714	2,862	3,007
Tot Sal & Wages	22,649	24,662	25,575	27,358	29,474
Empl Benefits	4,571	5,241	6,263	6,850	7,549
Tot Compensation	27,220	29,903	31,838	34,208	37,023
Current Expense	2,997	3,225	3,940	5,139	6,588
Debt Serv & Amort					
Equipment	352	342	375	683	767
Expense Credits	(326)	(503)	(399)	(880)	(786)
Std Aid Undgr Spec	817	969	903	912	774
Std Aid Grad Regl	2,768	2,201	2,713	2,685	3,413
Tot Direct Expend	33,828	36,137	39,370	42,747	47,779
V. Allocated Costs					
Utilities	4,060	4,350	4,703	4,437	4,908
Non-Utilities	2,840	3,545	4,027	4,192	4,188
Tot Oper & Maint	6,900	7,895	8,730	8,629	9,096
General Admin	2,636	3,207	3,650	3,903	4,056
General Expense	4,471	5,389	5,146	5,311	5,851
Net Space Alloc	260	312	378	419	461
Library					0
Tot Alloc Costs	14,267	16,803	17,904	18,262	19,464
Total Expend	48,095	52,940	57,274	61,009	67,243
VI. Performance	3	(539)	92	351	0

Figure 1
Unrestricted and Restricted Income for FY 1982 and FY 1986



that portion to 30.5 percent. Allocated costs grew by 36.4 percent (9.1 percent annual average) from FY 1982 to FY 1986.

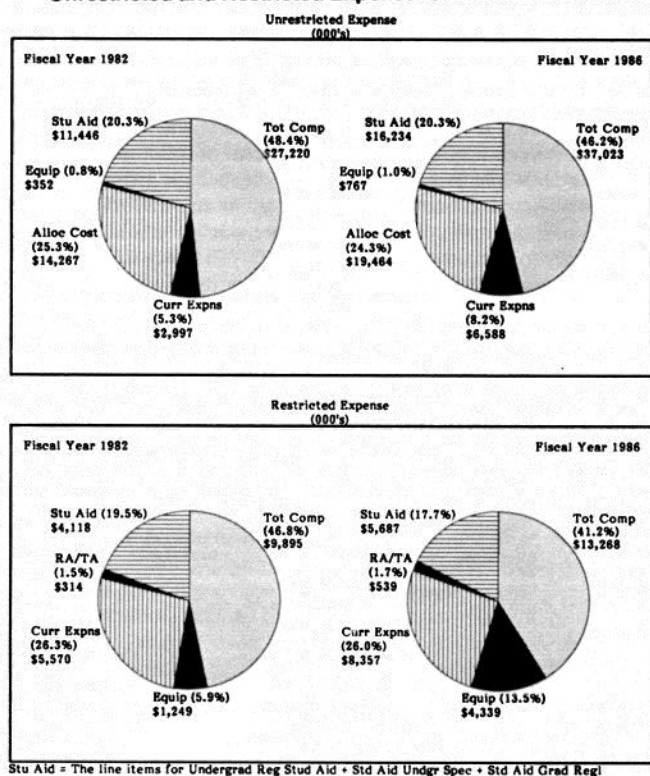
Student aid has increased by 41.8 percent over the past five years, keeping steady pace with other expenditures (it accounted for 20.3 percent of unrestricted expense in both FY 1982 and FY 1986, Figure 2).

Restricted Expense. Compensation constitutes the major portion of restricted expense (46.7 percent in FY 1982 and 41.2% in FY 1986, Figure 2). Overall, compensation grew by 34.1 percent from FY 1982 to FY 1986. Most compensation expense was in sponsored research, 70 percent of this for academic salaries.

Current expense, at 26.3 percent in FY 1982 and 26.0 percent in FY 1986, also accounts for a major portion of restricted expense. It has increased by 50 percent over the past five years. Much of current expense derives from the sponsored research budget.

There has been considerable fluctuation in the level of restricted expense for student aid, due to procedural changes in the funding of graduate student tuition remission by research grants. Originally, research grants were charged employee benefits costs for graduate students, and tuition remission was paid from the employee benefits pool. Later, grants were relieved of employee benefits costs for graduate students and became fully responsible for tuition remission. Now, tuition remission expense is shared equally by grants and the University.

Figure 2
Unrestricted and Restricted Expense for FY1982 and FY1986



2. The Next Five Years: FY 1988 - FY 1992

The following is a conservative projection of the School of Arts and Sciences' fiscal status. It is based on recent trends, and assumes only a moderate increase in development income. According to this projection, the School would manage to balance its budget, but would not have the capacity to fulfill the goals enumerated in this plan.

Enrollment

The national mood is swinging back toward a favorable view of the arts and sciences. There is growing recognition of the need for a solid liberal arts foundation for both professional and academic careers. The increasing appreciation of arts and sciences credentials on the part of the American business community, coupled with the prospect of a robust job market within academia through the 1990s, will help SAS continue to increase the quality of both its undergraduate and graduate student bodies.

The School expects to maintain the size of its undergraduate population throughout the next five years, with some enrollment shifts among departments and programs due to changes in the SAS distributional requirement and in student preferences. (Table 4) At the same time, assuming that SAS succeeds in increasing funds for fellowship support, additional graduate students will be admitted to certain programs, raising total graduate enrollments by about 5 percent annually (from 2,200 in FY 1987 to approximately 2,780 in FY 1992).

Table 4: SAS Course Enrollments FY1987 - FY1992

	FY 1987	FY1988	FY1989	FY 1990	FY1991	FY 1992
Undergrad	50,950	51,000	51,000	51,000	51,000	51,000
Graduate	7,850	7,900	8,000	8,100	8,200	8,300
CGS	11,490	11,500	11,600	11,600	11,600	11,600
Total	70,290	70,400	70,600	70,700	70,800	70,900

SAS plans to stem the enrollment decrease in the College of General Studies through careful program review and revision. The School's goal is to maintain level enrollments in CGS throughout the next five years. Fall, 1986 figures indicate that a slight increase is already taking place.

Faculty and Staff

While Arts and Sciences works to enhance overall faculty quality, it plans to maintain the current size of its standing faculty, making some internal shifts over the next five years. (Table 5) At the same time, SAS is committed to substantial increases in faculty salary.

Table 5: SAS Standing Faculty Projections FY1987 - FY1992

	FY 1987	FY 1988	FY 1989	FY 1990	FY 1991	FY 1992
Standing Faculty	500	505	505	505	505	505

The size of the non-standing faculty will also remain steady and, as instructional demands change, some teaching assistantships may be shifted to where the needs are greatest. We also hope to establish more School-sponsored research assistantships. Increases in grant support may fund additional research staff, while the growth of data communications and both academic and administrative computer usage will necessitate an increase in support staff in those areas. In addition, the upcoming development campaign will require the addition of a few staff members in SAS External Affairs. As the campaign brings in new resources, the School will rationalize, and perhaps expand, the faculty's secretarial and support staff.

Finances

Income. SAS expects undergraduate tuition income to increase by 8.9 percent in FY 1988, due to a 6.9 percent increase in tuition charges plus a modest rise in enrollment, and by 6.5 percent thereafter (Table 6). With predicted lower inflation rates in the future, however, the University may not be able to continue to raise tuition charges at recent rates. Thus, the largest component of the SAS income profile might be forced to flatten out in the next five years. It is disturbing to note that the School's dependence on tuition will continue to dominate through FY 1992, accounting for 56.9 percent of total income (Figure 3), while indirect cost recovery ("Cost Rec") will decrease as a proportion of unrestricted income, and gifts and investment income ("Other") will remain at less than 1 percent of total unrestricted income.

Growth in graduate enrollments and moderate increases in graduate tuition rates will result in increased graduate tuition income. SAS cannot augment its graduate student body as planned, however, without sufficient fellowship funds. The School, which lags behind most of its peer institutions in this regard, must greatly increase expenditures for graduate student fellowships over the next five years. The projected unrestricted budget does not include all needed fellowship funds.

With CGS enrollment declines leveling off, SAS expects undergraduate special income to increase by 8.9 percent in FY 1988, and by 6.5 percent annually thereafter (Table 6).

In view of its recent history of successful investment, SAS anticipates a 12 percent increase in investment income and a 15.7 percent rise in indirect cost recovery from endowments in FY 1988 (Table 6). Each

should level off at 7 percent in FY 1989, then increase to 7.5 percent after FY 1989 as a result of development efforts. Gift income should begin to grow immediately—by 6.7 percent in FY 1988, and by 15 percent annually thereafter. SAS projects a 9.6 percent increase in indirect cost recovery rates from federal grants and contracts ("Sponsored Prog") from FY 1987 to FY 1988, and 6 percent increases in following years.

As of FY 1987, the University altered the budgetary status of the University Library. Library support became an allocated cost to each School, and funds—in the forms of increased subvention and increased overhead cost recovery—were transferred to the Schools to cover this added expense. Subvention to the School of Arts and Sciences, then, increased by 48.3 percent between FY 1986 and FY 1987. In coming years, the School's subvention income is expected to increase at a substantially slower rate than that of the past five years (an average of 7.4 percent annually). The new, slower rate of increase, combined with

higher than average increases in allocated costs, will compound the difficulty of balancing the SAS budget. The University has projected, for example, that Library costs will increase by 6.5 percent annually (Table 6), yet subvention support will increase by an average annual rate of only 4.9 percent. SAS hopes that the strength of its proposals for the University's special development funds will bring added support for innovation and leadership in undergraduate education and for research and scholarship (these potential increases are not included in current projections).

Drastic increases in costs associated with academic computing require the introduction of an SAS technology fee for undergraduate students. The charge of \$100 per semester will take effect in the spring of 1988.

Table 7
SAS Outline Budget for FY 1987-FY 1992

Arts and Sciences Unrestricted (thous of dollars)	FY1987 SAS BUDGET	FY1988 SAS ESTIM.	FY1989 SAS ESTIM.	FY1990 SAS ESTIM.	FY1991 SAS ESTIM.	FY1992 SAS ESTIM.
I. Direct Revenues (000's)						
Tuition						
Undergrad Reg	45,660	49,717	56,949	56,390	60,056	63,959
Less Stud Aid	(12,896)	(13,842)	(14,787)	(15,748)	(16,771)	(17,862)
Net Undergr Reg	32,764	35,875	38,162	40,642	43,284	46,098
Undergr Spec	5,594	6,093	6,489	6,911	7,360	7,838
Graduate Reg	7,737	8,412	9,274	10,225	11,273	12,428
Graduate Spec	535	626	673	723	778	836
Total Tuition	46,630	51,006	54,598	58,501	62,695	67,200
Tuit Spec Prog	1,749	1,627	1,733	1,845	1,965	2,093
Technology Fee		560	1,120	1,176	1,235	1,297
Special Fees	214	205	215	226	237	249
Invest Income	443	496	531	571	613	659
Gifts	75	80	92	106	122	140
Ind Cost Recover						
Endowments	451	522	559	600	645	694
Sponsored Prog	5,223	5,723	6,066	6,430	6,816	7,225
Other Rest Fds	200	208	216	231	248	265
Total Ind Cost Rec	5,874	6,453	6,841	7,262	7,709	8,184
Sales & Services	36	38	38	38	38	38
Other Income	149	178	185	193	200	208
Total Dir Revenues	55,169	60,643	63,353	69,918	74,815	80,069
II. Gen Univ Subvent						
Program Spec	0	0	0	0	0	0
Mudd Debt Serv		(100)	(100)	(100)	(100)	(50)
Program Reg	20,944	21,894	22,651	23,830	25,045	26,297
Stud Fin Aid	1,772	1,794	1,848	1,903	1,960	2,019
Tot Gen Univ Sub	22,716	23,588	24,399	25,634	26,906	28,266
III. Bank Transaction						
Total Revenues	77,885	84,231	89,752	95,552	101,720	108,334
IV. Direct Expend						
Salaries & Wages						
Academic	23,029	24,629	26,175	27,805	29,525	31,340
Admin	2,857	3,055	3,208	3,368	3,537	3,713
Clerical	2,577	2,760	2,898	3,043	3,195	3,355
Service	135	167	175	184	193	203
Limited Serv	742	875	910	946	984	1,024
Stipends TA/RA	2,873	2,873	3,045	3,228	3,422	3,627
Tot Sal & Wages	32,214	34,359	36,411	38,575	40,856	43,262
Empl Benefits	8,074	7,730	8,843	9,371	9,928	10,515
Tot Compensation	40,288	42,089	42,254	47,946	50,785	53,777
Benefit Recvry Alloc	0	612	0	0	0	0
Current Expense	5,233	5,847	6,089	6,423	6,759	7,142
Debt Serv & Amort	500	600	600	600	600	600
Equipment	100	418	628	659	692	727
Expense Credits	(473)	(578)	(578)	(578)	(578)	(578)
Std Aid Exp Credit			(25)	(28)	(30)	(33)
Std Aid Undgr Spec	963	1,063	1,116	1,172	1,231	1,292
Std Aid Grad Regl	3,419	4,248	4,683	5,163	5,693	6,276
Tot Direct Expend	50,030	54,299	57,767	61,359	65,151	69,204
V. Allocated Costs						
Utilities	5,591	5,550	5,911	6,295	6,704	7,140
Non-Utilities	4,325	4,937	5,258	5,600	5,964	6,351
Tot Oper & Maint	9,916	10,487	11,169	11,895	12,668	13,491
General Admin	4,346	4,736	5,044	5,372	5,721	6,093
General Expense	6,300	6,868	7,314	7,790	8,296	8,835
Net Space Alloc	641	780	936	1,123	1,348	1,617
Library	6,652	7,061	7,520	8,009	8,529	9,084
Tot Alloc Costs	27,855	29,932	31,983	34,188	36,562	39,120
Total Expend	77,885	84,231	89,750	95,547	101,713	108,324
Performance	0	0	2	5	7	10

Table 6
Percent Change for Budget Projections, FY 1988-FY 1992

Arts and Sciences Unrestricted (000's)	FY1988	FY1989	FY1990	FY1991	FY1992
I. Direct Revenues (000's)					
Tuition					
Undergrad Reg	8.9%	6.5%	6.5%	6.5%	6.5%
Less Stud Aid	7.3%	6.5%	6.5%	6.5%	6.5%
Net Undergr Reg					
Undergrad Spec	8.9%	6.5%	6.5%	6.5%	6.5%
Graduate Reg	8.7%	10.3%	10.3%	10.3%	10.3%
Graduate Spec	17.0%	7.5%	7.5%	7.5%	7.5%
Total Tuition					
Tuit Spec Prog	-7.0%	6.5%	6.5%	6.5%	6.5%
Technology Fee		0.0%	5.0%	5.0%	5.0%
Special Fees	-4.2%	5.0%	5.0%	5.0%	5.0%
Invest Income	12.0%	7.0%	7.5%	7.5%	7.5%
Gifts	6.7%	15.0%	15.0%	15.0%	15.0%
Ind Cost Recover					
Endowments	15.7%	7.0%	7.5%	7.5%	7.5%
Sponsored Prog	9.6%	6.0%	6.0%	6.0%	6.0%
Other Rest Fds	4.0%	4.0%	7.0%	7.0%	7.0%
Tot Ind Cost Rec					
Sales & Services	5.6%	0.0%	0.0%	0.0%	0.0%
Other Income	19.5%	4.0%	4.0%	4.0%	4.0%
Tot Dir Revenues					
II. Gen Univ Subvent					
Program Spec	0.0%	0.0%	0.0%	0.0%	0.0%
Mudd Debt Serv					
Program Reg	4.5%	3.0%	3.0%	3.0%	3.0%
Stud Fin Aid	1.2%	3.0%	3.0%	3.0%	3.0%
Tot Gen Univ Sub					
III. Bank Transaction					
Total Revenues					
IV. Direct Expend					
Salaries & Wages					
Academic	6.9%	5.5%	5.5%	5.5%	5.5%
Admin	6.9%	5.0%	5.0%	5.0%	5.0%
Clerical	7.1%	5.0%	5.0%	5.0%	5.0%
Service	23.7%	5.0%	5.0%	5.0%	5.0%
Limited Serv	17.9%	4.0%	4.0%	4.0%	4.0%
Stipends TA/RA	0.0%	6.0%	6.0%	6.0%	6.0%
Total Sal & Wages					
Empl Benefits	-4.3%	5.5%	5.5%	5.5%	5.5%
Tot Compensation					
Benefit Recovery Allocation					
Current Expense	11.7%	5.0%	5.0%	5.0%	5.0%
Debt Serv & Amort	20.0%	0.0%	0.0%	0.0%	0.0%
Equipment	318.0%	5.0%	5.0%	5.0%	5.0%
Expense Credits	22.2%	0.0%	0.0%	0.0%	0.0%
Std Aid Exp Credit			10.0%	10.0%	10.0%
Std Aid Undgr Spec	10.4%	5.0%	5.0%	5.0%	5.0%
Std Aid Grad Regl	24.2%	10.3%	10.3%	10.3%	10.3%
Tot Direct Expend					
V. Allocated Costs					
Utilities	-0.7%	6.5%	6.5%	6.5%	6.5%
Non-Utilities	14.2%	6.5%	6.5%	6.5%	6.5%
Tot Oper & Maint	5.8%	6.5%	6.5%	6.5%	6.5%
General Admin	9.0%	6.5%	6.5%	6.5%	6.5%
General Expense	9.0%	6.5%	6.5%	6.5%	6.5%
Net Space Alloc	21.7%	20.0%	20.0%	20.0%	20.0%
Library	6.1%	6.5%	6.5%	6.5%	6.5%

(Both the Wharton School and the School of Engineering and Applied Science instituted a similar fee in fall, 1986.) Income gained by Arts and Sciences through this measure will total approximately \$515,000, and will be used to help cover the costs of new equipment and personnel increases in the Audio-Visual Center and in academic computing and data communications.

Expense. While the size of the standing faculty will remain constant, more and more current faculty positions will be supported by endowed chairs, allowing SAS to use the savings in unrestricted funds for other types of faculty support. Some of those savings have been factored into the unrestricted budget from FY 1989 forward. While the School is budgeting only modest salary increases overall, it hopes to use new funds to ensure proper starting salaries for assistant professors and to create incentives to retain its best faculty and attract outstanding scholars from elsewhere. Salary increases for non-faculty employees will increase at the standard rate.

Stipends for teaching assistants will not increase from FY 1987 to FY 1988; instead, beginning in FY 1988, SAS will pay the \$750 general fee for all TAs.

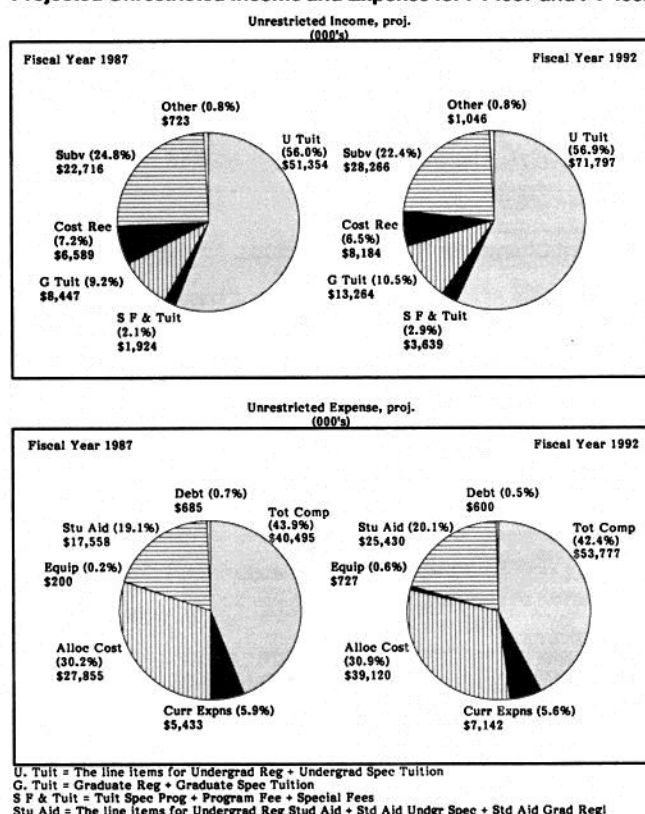
Table 7 reflects an expected decrease in the University's Employee Benefit ("Empl Benefits") rate from 28.0 percent to 27.0 percent. Increased expenditures for technology have been factored into the Current Expense and Equipment categories from FY 1988 forward. Required improvements to SAS animal care facilities account for additional projected increases in equipment expenditures, and increases in debt service ("Debt Serv & Amort") expenditures.

Figure 3 indicates that overall student aid costs are expected to increase from 19.1 percent to 20.1 percent of SAS unrestricted expense from FY 1987 to FY 1992. The planned initiation of the School of Arts and Sciences Undergraduate Scholarship Fund is reflected in Tables 6 and 7 under student aid expense credit (Std Aid Exp Credit).

According to current University projections, allocated costs will rise appreciably (by 7.5 percent) from FY 1987 to FY 1988. As tuition income begins to flatten, SAS will not be able to support such increases in allocated cost without going into deficit. Increases in allocated costs can be partially attributed to Penn's investment in data communications and in the design and purchase of administrative computer systems. These investments will have a dramatic but as yet unspecified impact on the entire University. Any extra costs incurred by the enhancement of Penn's

automated systems must be balanced by cost-savings gained through use of the systems themselves. The key to achieving these cost-savings is careful planning. SAS will work with central offices in the long-range planning of data communications and administrative information systems. Projections presented here assume some success in these efforts to control the rate of increase in allocated costs.

Figure 3
Projected Unrestricted Income and Expense for FY1987 and FY 1992



IV. Resources

The key to achieving distinction in teaching, research, and service is people. The School of Arts and Sciences must retain its outstanding faculty, continue to attract new exemplary faculty, and enhance its graduate and undergraduate programs in order to attract the best students in the nation. To be successful, it must offer an exceptionally attractive environment, one that enables faculty to teach and pursue their academic careers successfully and, at the same time, challenges students—undergraduate and graduate alike—to reach new educational heights.

SAS must also make a concerted effort to apprise all of its constituencies—internal and external alike—of its offerings and accomplishments. An ad hoc committee is now developing a comprehensive plan to ensure the effective public presentation of Arts and Sciences, and to help solidify a coherent School identity. Successful implementation of this plan will require a significant investment in the near future.

Section III makes clear that Arts and Sciences' goals cannot be attained without substantial change in its fiscal status. Three steps will be taken to effect this change. First, the School will optimize the use of existing resources. It will examine the use of faculty time in such areas as undergraduate and graduate instruction, research and scholarship, and service; similar School-wide reviews will be conducted to examine use of non-faculty personnel (for example, teaching assistants, administrative staff, and support staff) and use of physical space and facilities (see

Management and Efficiency, page X-X1).

Next, SAS will draw on Penn's recently established five-year Funds for Undergraduate Education and Research Facilities Development, and on the University's planned Faculty Development Fund. The School has already received awards from the Undergraduate Education Fund in support of initiatives in undergraduate education, and from the Research Facilities Development Fund for the modernization of laboratories and other research facilities. The Faculty Development Fund could significantly bolster Arts and Sciences' attempts to recruit new world-class scholars.

While resources gained through internal reallocation and University Funds will contribute greatly to the School's efforts, they will hardly fulfill all of its fiscal needs. The third step, then, is to raise substantial new funding in terms of capital development.

Capital Development Needs

The following needs—most of which were detailed in previous sections of the Plan—have been identified for SAS to achieve its five-year goals. A preliminary estimate of the total cost of these needs would be \$360 million, which might be distributed in the following way:

1. *Seventy-five Endowed Chairs.* The School of Arts and Sciences currently has 30 endowed chairs, only nine of which are fully endowed at \$1.25 million. Seventy-five additional fully endowed chairs are needed in

order for the School to recognize the scholarly accomplishments of some of its most outstanding faculty and attract at least 40 new eminent scholars to its ranks (in addition to those recruited through the University's Faculty Development Fund). We will need \$93,750,000 in endowment funds for these chairs.

2. One-Hundred and Fifty Term Chairs (seventy-five of these endowed). In the past two years, Arts and Sciences' ability to offer term chairs (named chairs, generally awarded for five-year periods, that provide \$10,000 annually in research funds) has greatly enhanced its efforts to retain some of its most outstanding teachers and scholars and attract outstanding new ones. In the past 18 months alone, the School has received funding for 17 new term chairs; three of these are the result of a recently awarded Mellon grant of more than \$1 million. Funds freed by the use of the Mellon grant may allow SAS to appoint additional term chairs in the near future. Our plan is to raise \$18,750,000 for seventy-five endowed term chairs (\$250,000 each) and \$3,750,000 for seventy-five five-year term chairs (\$50,000 each).

3. SAS Faculty Research Fund. In order to foster the research efforts of its faculty, Arts and Sciences must provide them with special funds to attend national and international scholarly meetings, acquire new research equipment, organize scholarly conferences, and investigate new research opportunities. Most importantly, SAS will provide start-up funds for new faculty in many disciplines. It also needs to provide faculty assistance in the document preparation process. For these reasons, the School plans to create an SAS Faculty Research Fund which will cover costs not provided for in the University Research Fund; \$400,000 freed by the use of the Mellon grant (see above) will help establish this Fund. \$20 million is required for the endowment of this fund.

4. Research Center Endowment Fund. This five-year plan stresses the importance of the role played by Research Centers in furthering interdisciplinary dialogue, focusing attention on geographical area studies, and supporting research innovations. SAS intends to initiate a Research Center Endowment Fund of \$4 million to support the enhancement and establishment of Research Centers.

5. Undergraduate Scholarship Endowment Fund. In order to recruit the best undergraduates in the nation, SAS must not only offer first-rate undergraduate programs, but also provide students with adequate financial assistance. Special emphasis must be placed on support of qualified minority students. The School must raise \$25 million of new endowment funds for undergraduate financial aid.

6. SAS Undergraduate Education Fund. The University's Undergraduate Education Fund has been and will continue to be an important resource for innovations and experiments in undergraduate education over the next three years. Arts and Sciences needs, however, to begin to develop its own Undergraduate Education Fund to support such initiatives in case the University's Fund expires. The SAS Fund would be used, for example, to create new course offerings and experimental programs for majors. It requires an endowment of \$10 million.

7. Summer Internships. Arts and Sciences also intends to establish a program of internships that would give gifted undergraduates the opportunity to work on a one-to-one basis with faculty on summer research projects. To support 200 gifted students each summer for the next five years, the School needs to raise \$5 million.

8. Two-Hundred Graduate Fellowships. The importance of attracting gifted graduate students to Penn has been made abundantly clear in the preceding pages. Promising graduate students can be attracted most successfully if SAS is able to offer multi-year fellowships. Yet University provisions for undergraduate aid considerably outnumber those for graduate support. As part of its effort to increase graduate assistance, the School plans to establish 200 four-year fellowships, 75 of these endowed. Together these require a total of \$47,500,000 (\$37,500,000 for the endowed fellowships; \$10,000,000 for the remainder).

9. SAS Graduate Education Fund. Last year, the SAS Graduate Education Fund was established to help graduate students attend scholarly meetings. It is currently financed primarily by Graduate Annual Giving. The School plans to expand the Fund to support a wider array of activities—for example, travel to archives, the purchase of research equipment and supplies, and the initiation of dissertation projects. For this purpose, the School must raise an endowment of \$5 million.

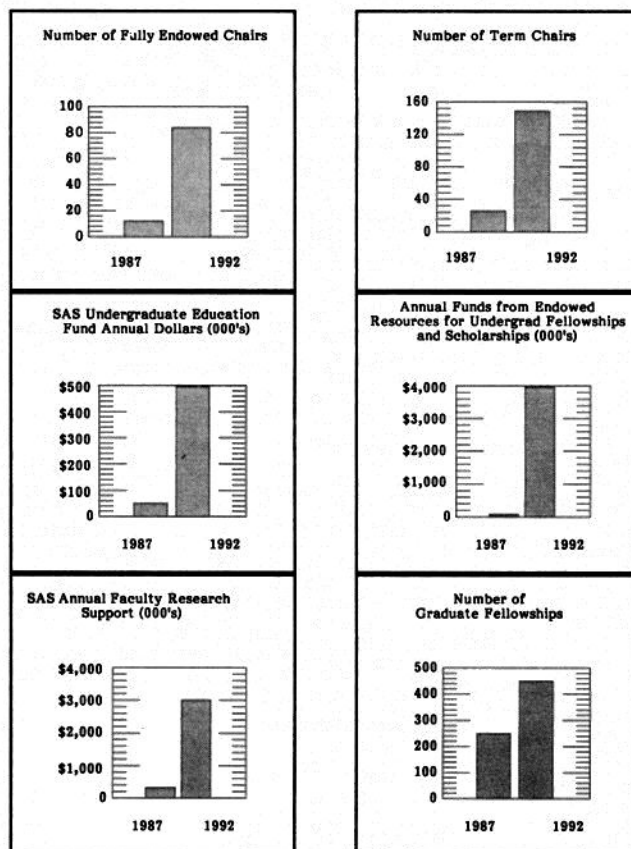
10. Fund for the Liberal Arts and Sciences. A distinguished school of arts and sciences must be able to provide the opportunity for new, unanticipated, and creative projects to flourish. An endowed fund of \$5 million is needed to permit the leadership of the School of Arts and Sciences to encourage such innovations; \$100,000 freed by the use of the Mellon grant (see item 2, above) will help establish this fund.

11. Construction and Renovation of Buildings and Facilities. The section on Physical Plant and Facilities describes in considerable detail Arts and Sciences' currently identified construction and renovation needs: renovation of the Chemistry complex, Logan Hall, and Bennett Hall; a new Psychology and Social Science Building; a new Music and Humanities Building; and a new Science Complex. The total costs of planned projects is \$110,000,000.

12. Construction of Infrastructure and Purchase of Equipment To Participate in the University's Computer Network. The establishment of a University-wide computer network will incur significant expense. SAS, along with the University's other Schools, will help pay for the initial installation of the computer spine through increased allocated costs. In addition, it will need \$10,500,000 to finance the connection of the spine to offices within Arts and Sciences—an extremely costly process that will involve all of its 22 campus buildings. Expenses will include the purchase of computer and network hardware and software and the provision of staff support.

The graphs presented in Figure 4 illustrate the estimated impact of the infusion of substantial external resources on six selected areas: fully endowed chairs, term chairs, the SAS Undergraduate Education Fund, undergraduate fellowships and scholarships, faculty research support, and graduate fellowships. Note, for example, the dramatic potential of external funds to increase the number of term chairs available by 1992. Note too the striking effect of additional funds on projected resources for undergraduate support.

Figure 4
Potential Effect of Planned Level of New Resources on Selected Areas in SAS By 1992



V. Summary

The School of Arts and Sciences is a community of scholars and students committed to:

- the pursuit of intellectual challenges that broaden our understanding of humanity and the universe;
- the preparation of future generations of scholars who will join in the pursuit of these challenges;
- the education of informed citizens who can provide the intellectual and ethical leadership required in all endeavors in our increasingly complex world.

This commitment is carried out through comprehensive efforts in:

- Research and Scholarship
- Undergraduate Education
- Graduate Education
- Lifelong Education

If SAS is to face the coming decades as a School of distinction, it must enhance current strengths and reach new goals in each strategic area:

- **Research and Scholarship.** To attract and retain faculty of the highest caliber, SAS will work toward increasing faculty compensation and establishing new endowed and term chairs. The School will place particular emphasis on recruiting outstanding women and minority candidates.

New support mechanisms—both financial and logistical—will be put into place to help ensure faculty the kind of work environment in which research and scholarship can flourish. As new technologies are integrated into research activities, faculty will receive special technical assistance and support.

Interdisciplinary interaction will continue to be encouraged, and Research Centers will be strengthened. The School will also foster endeavors of an international nature, and build on existing links with academic institutions abroad.

- **Undergraduate Education.** Arts and Sciences is committed to recruiting a student body of the highest scholarly potential, and places special emphasis on the recruitment and retention of minority students. The School will work toward ensuring that adequate financial assistance is available to fulfill that commitment.

At the same time, SAS will focus on improving the quality of the undergraduate experience by strengthening the curriculum, increasing student-faculty interaction, and taking the lead in coordinating College programs with those of Penn's other Schools. More specifically, efforts are underway to enhance the distributional requirement, enrich major programs, foster interdisciplinary activities, and ensure the full development of students' basic intellectual skills. New mechanisms are also being developed to ensure consistent high-quality instruction, and to improve the freshman experience. To further strengthen the curriculum, and to promote undergraduate interest in the pursuit of academic careers, undergraduate research opportunities will be expanded, summer research internships established, and submatriculation options enhanced.

It is imperative, particularly as society becomes increasingly internationalized, to foster students' development of a global perspective and build School-wide connections with institutions abroad. The School of Arts and Sciences will continue to promote the development of courses on international subjects, and encourage student and faculty participation in international activities, both on campus and overseas.

Finally, SAS recognizes the importance of providing students with comprehensive guidance throughout their undergraduate careers. For this reason, special efforts are being made to enhance and supplement advising options. For example, a faculty advising program is being planned to provide students with individualized academic guidance during the pre-major period.

- **Graduate Education.** Central to the School's plan is the recruitment of outstanding students into graduate programs. Particular attention is being focused on the recruitment and retention of women and minority students. To attract top candidates, the School must be able to provide adequate funding. SAS will work toward increasing the availability of graduate student aid and, at the same time, develop a coordinated marketing strategy to ensure the national visibility of its graduate programs.

The School of Arts and Sciences will also focus on strengthening these programs. For example: each program will be carefully evaluated as part of an ongoing departmental review process; increased student-faculty

interaction will be encouraged through, for instance, the formation of new workshops and colloquia; and a recently established Graduate Education Fund will provide students with special research support.

Steps are also being taken to improve instructional training for graduate teaching assistants, to help facilitate students' rapid progress through doctoral programs, to enhance the graduate student information system, and to improve procedures for helping graduate students find appropriate employment both in higher education and elsewhere.

- **Lifelong Education.** The School of Arts and Sciences is conducting a formal study to examine the role of its College of General Studies in view of the changing interests and needs of the non-traditional student population. The results of this study will help CGS reassess its programmatic directions.

CGS now offers a wide range of credit, non-credit, and service programs. It is, for example, building linkages with private industry, developing innovative part-time post-baccalaureate programs, providing non-credit workshops and seminars for Penn alumni nationwide, and offering special services to arts and sciences educators at all academic levels.

The College of General Studies is also taking administrative steps to improve its ability to provide high-quality lifelong education. It has begun to implement an automated student information system, and is exploring new ways to increase financial support for part-time students.

The efforts of the School of Arts and Sciences in each of these areas will be accompanied by supporting initiatives to enhance its management processes and improve its physical plant and facilities.

- **Management and Efficiency.** In order to effectively manage its resources, SAS will continue to develop management information systems, increase its ability to collect and analyze needed data, provide training opportunities for faculty administrators and staff, and introduce new support and incentive systems.

- **Physical Plant and Facilities.** The provision of adequate space and modern equipment is necessary to support the efforts of outstanding faculty and students. SAS plans to improve existing research facilities, enhance classroom space, heighten energy efficiency, and implement a plan for the regular maintenance of all Arts and Sciences buildings.

The School has specifically identified three renovation and three construction projects as essential to the modernization of its physical plant. A Task Force on space planning will be appointed to develop project plans and examine SAS space needs in general.

A substantial investment will also be made in updating computing, data communications, and audio-visual facilities for the support of research and instructional activities.

If the School of Arts and Sciences is to accomplish its goals, it must not only carefully manage existing resources, but also raise significant new ones. The School's total capital development needs would be approximately \$360,000,000.

Conclusion

This plan heralds a new era for the School of Arts and Sciences, as it assumes a central place in the intellectual and educational enterprise of the University. The planning process itself has promoted self-scrutiny and created momentum in the departments and across the School. This unity of purpose has sparked the extensive reforms of undergraduate education that are currently underway. SAS has as a result achieved a more distinct sense of its own identity, and a fresh commitment to a strong leadership role in higher education as a whole.

The School's vitality is built on and extends its rich history, and is reflected in the impressive accomplishments of its faculty and students. Over the next five years, SAS will enhance its strengths in order to foster this energy and continue to build creative links with other Schools. The University will benefit greatly from the development of new resources for Arts and Sciences. The School's success in this effort will help ensure Penn's lasting reputation as an institution of the first rank. SAS seeks the support of the entire University community as it moves to fulfill its promise of high distinction.

Appendix A

SAS Planning Benchmarks: FY 1987 - FY 1992

GOALS	FY87	FY88	FY89	FY90	FY91	FY92
I. Research and Scholarship:						
A. Recruitment of 40 world-class scholars (cum total)	2	5	10	20	30	40
B. New endowed chairs for 35 current faculty (cum total)	0	5	10	20	30	35
C. Term chairs (cum total)	15	30	60	90	120	150
D. Faculty compensation (% peer institutions)	93%	94%	95%	96%	98%	100%
E. Faculty research fund (cum total)	\$0	\$2M	\$5M	\$12M	\$16M	\$20M
F. Extramural grants (annual total)	\$30M	\$34M	\$38M	\$42M	\$46M	\$50M
G. Research centers fund (cum \$ in fund)	\$0	\$.2M	\$.5M	\$1M	\$2M	\$4M
II. Undergraduate Education:						
A. Distribution requirement reform	Plan*	Init		Comp		
B. Individual research/synthesis course in major		Init			Comp	
C. Teaching improvement program	Init		Comp			
D. Summer internships		Plan	Init		Comp	
E. Number of freshman seminars taught by faculty	32	52	65	75		
F. Faculty freshman advising (% Freshmen involved)	20%	50%	75%	100%		
G. Undergraduate scholarship fund (cum \$ in fund)	\$0	\$1M	\$3M	\$10M	\$15M	\$25M
H. SAS undergraduate education fund (cum \$ in fund)	\$0	\$.5M	\$1M	\$5M	\$7.5M	\$10M
I. Expansion of CIMS	Plan	Init			Comp	
J. Programs to prepare future scholars	Plan	Init		Comp		
K. Development of competencies: writing, computer, analytic, oral, foreign language	Plan	Init			Comp	
III. Graduate Education:						
A. Graduate support (number students supported)	636	650	700	750	850	1000
B. New graduate fellowships (cum total)	0	25	50	100	150	200
C. Program review (cum programs reviewed)	8	11	15	20	25	30
D. Automation of Graduate Division records	Init		Comp			
E. Revision in program length	Plan	Init		Comp		
F. SAS graduate education fund (cum \$ in fund)	\$0	\$.2M	\$.5M	\$3M	\$4M	\$5M
G. Graduate population growth (cum grad size)	2200	2288	2402	2523	2649	2781
H. Graduate communications plan	Plan	Init			Comp	
I. Grad chair training in recruitment & job placement	Plan	Init		Comp		
IV. Lifelong Education:						
A. Marketing survey	Init	Comp				
B. Minority students in basic sciences		Init		Comp		
C. Graduate Division for Continuing Education	Plan	Init		Comp		
D. Automation of CGS student/client records	Init		Comp			
E. Expansion of CIGNA-like programs (# of programs)	Plan	Init			Comp	
F. Student financial support fundraising (\$ in fund)	\$0	\$.1M	\$.3M	\$.5M	\$.6M	\$.8M
V. Management and Efficiency:						
A. Master course list	Init	Comp				
B. Course evaluation data bank	Plan	Init	Comp			
C. Budget planning information systems	Init	Comp				
D. Faculty information	Init		Comp			
E. Training of dept. chairs and staff	Plan	Init			Comp	
F. Departmental information systems	Init			Comp		
G. New incentive and support systems	Plan		Init			Comp
H. Resource management	Plan	Init				Comp
VI. Physical Plant and Facilities:						
A. Chemistry complex	Plan	Init		Comp		
B. Logan Hall renovation		Plan				
C. Bennett Hall renovation		Plan				Comp
D. Psychology and social science building	Plan				Comp	
E. Music and humanities building		Plan				Init
F. Science tower		Plan				Init
G. Audio-visual facility	Plan	Init				
H. Data communications networks	Plan	Init				Comp

* Plan: planning for this activity will begin in this fiscal year.

Init: this activity will be initiated in this fiscal year.

Comp: this activity will be fully implemented or completed in this fiscal year.

Appendix B

Planning Timetable:

A Schedule for the Development Of The SAS Five-Year Plan

(FY 1988 - FY 1992)

Month(s) Year Task

Stage I: The Initial Planning Process

December 1985	Dean & Task Force to conclude evaluation of planning process:
	1. Discuss process and establish schedule.
	2. Prepare a concise mission statement and brief, well-known set of goals.
	3. Complete mission statement for Undergraduate Education.
	4. Prepare draft mission statement for Graduate Education, Research and Scholarship, and Continuing Education (by mid-January).
	5. Discuss issue of selective excellence and alternatives.
	6. Determine what data are needed now (for the planning process) and later (i.e., can be an objective of the plan) in reference to:
	a. educational programs
	b. faculty characteristics—ratings of departments, size of departments at comparable institutions, and faculty compensation
	c. characteristics of the student body as compared to those of other institutions
	d. research
	e. facilities
	f. support staff
	g. budget
	h. alumni relations
	i. environmental factors—e.g., changes in federal policies affecting higher education, and job markets for SAS graduates
	Gather data needed for formulation of the plan.
	7. Determine which units should have input into the plan-ning process.
	8. Decide to what extent departmental plans should be coordinated at the divisional level.
	9. Prepare guidelines for input from the various units.
	10. Determine mechanisms for coordination with other schools at Penn.
January 1986	Joint review of planning process by SAS Task Force on Planning and Planning Advisory Board of the SAS Board of Overseers.
January 1986	Review of planning process at meeting of SAS departmental chairs.
February 1986	Review by Task Force of draft mission statements on Graduate Education, Research and Scholarship, and Lifelong Education.
February 1986	Review of proposed planning process, mission statements, strategic goal, targeted goals, and planning schedule with SAS Advisory Committee.
February 1986	Review by Task Force of 1982-83 SAS departmental plans to consider points relevant to current SAS targeted goals.
February 1986	Circulation of draft planning documents (mission statements, strategic goal, targeted goals, and planning schedule) to all members of SAS faculty for review and comment.
February 1986	Circulation of draft SAS planning documents to academic departments for departmental comment. Circulation of guidelines and request for revision of departmental planning documents. Dean and appropriate staff meet with department chairs and heads of administrative units to discuss planning documents and review preliminary questions to be answered in relation to the School missions and targeted goals. Administrative personnel as well as academic personnel in departments are given an opportunity to comment on SAS preliminary plan and give suggestions regarding their departmental plans.

Stage II: Development of Detailed Objectives to Achieve Targeted Goals

February 1986	Review by SAS Board of Overseers Planning Advisory Board of planning process and preliminary SAS planning document.
March 1986	Discussion of planning process and draft planning documents at the meeting of SAS faculty.
March 1986	Completion of preliminary planning document, including the introduction, mission statements, strategic goal, targeted goals, and planning schedule.
March 1986	Review of preliminary plan by SAS Administrative Committee and SAS Faculty Advisory Committee.
March 1986	Preliminary meetings of divisional committees (i.e., faculty committees composed of persons from departments in the humanities, natural sciences, and the social sciences) to review divisional plans. Divisional committees prepare divisional plans for presentation to SAS Task Force on Planning.
March 1986	Joint review of progress of planning process and of SAS preliminary plan by SAS Board of Overseers Planning Advisory Board and Task Force on Planning.
April 1986	Review of planning process and preliminary plan with SAS Board of Overseers.
June 1986	Deadline for submission of plans by departments and other academic and administrative units of SAS, including revisions to prior departmental plans as needed and amendments as requested by Dean.
Summer 1986	Review of departmental and unit planning documents and divisional planning initiatives with an eye toward integration of plans and establishment of priorities.

Stage III: Drafting the Final Five-Year Plan

Summer 1986	Development of first draft of SAS five-year plan, using preliminary plan and departmental contributions to the plan as a basis.
Summer/Fall 1986	Distribution of plan to advisory groups for comment. Ongoing revision of draft with SAS Task Force on Planning and Board of Overseers Planning Advisory Board.
October 1986	Review of draft plan by SAS divisional planning committees, SAS Dean's Advisory Committee, SAS Administrative Committee.
February 1987	Circulation of draft plan to SAS faculty.
February 1987	Review of plan by SAS Board of Overseers Planning Advisory Board, SAS Faculty Advisory Committee, and SAS Administrative Committee.
March 1987	Response to departments and other academic and administrative units on their planning reports.
March 1987	Revision of draft for presentation to Board of Overseers.
April 1987	Presentation of revised draft to Board of Overseers.
April 1987	Revision of plan for presentation to Provost and University Academic Planning and Budget Committee.
April 1987	Final revision of plan based on comments by Academic Planning and Budget Committee.
April 1987	Presentation of plan to Provost, Academic Planning and Budget Committee, and University community.

Participants In Planning Process

SAS Task Force on Planning

Jere Behrman—Economics
David DeLaura—English
Richard Dunn—History
Robert Dyson—Anthropology
William Telfer—Biology
Frank Warner—Mathematics

Planning Subcommittee of the Board of Overseers

David Auten
Michael Crow
Edward Mannino
Richard Sheerr

SAS Humanities Committee on Planning

David DeLaura—English
Richard Dunn—History
Stephen Nichols—Romance Languages
Gillian Sankoff—Linguistics
Wendy Steiner—English
Scott Weinstein—Philosophy

SAS Natural Sciences Committee on Planning

Dorothea Jameson-Hurwich—Psychology
William Reinhardt—Chemistry
Robert Rescorla—Psychology
Paul Steinhardt—Physics
William Telfer—Biology
Frank Warner—Mathematics

SAS Social Sciences Committee on Planning

Arjun Appadurai—Anthropology
Jere Behrman—Economics
Robert Dyson—Anthropology
Janice Madden—Regional Science
Ann Miller—Sociology
Charles Rosenberg—History and Sociology of Science

Research and Scholarship Mission Statement Committee

Elias Burstein—Physics
Donald Fitts—Associate Dean, Graduate Division
John Graham—Classical Studies
Eugene Narmour—Music
Michael Wachter—Economics

Undergraduate Education Mission Statement Committee

Ivar Berg—Associate Dean, the College
David Brownlee—History of Art

Drew Faust—American Civilization
Elliott Mossman—Slavic Languages and Literature
Edward Peters—History
Rosane Rocher—South Asia Regional Studies
Stephen Roth—Biology
Frank Warner—Mathematics
David Williams—Psychology

Graduate Education Mission Statement Committee

Donald Fitts—Associate Dean, Graduate Division
Nancy Farriss—History
Samuel Preston—Sociology
Paul Soven—Physics
Robert Turner—English

Lifelong Education Mission Statement Committee

David Burnett—Associate Dean, College of General Studies
James Davis—Chemistry
Ian Harker—Geology
Frank Johnston—Anthropology
Robert Kraft—Religious Studies
Maria Menocal—Romance Languages
Ellen Prince—Linguistics
Janice Radway—American Civilization
Cornelia Seidel—College Advising Office

SAS Faculty Advisory Committee

Ralph Amado—Physics
Frank Johnston—Anthropology
Stanley Opella—Chemistry
Michele Richman—Romance Languages
Carroll Smith-Rosenberg—History
Saul Sternberg—Psychology
Paul Taubman—Economics
Oliver Williams—Political Science
Eugene Wolf—Music

SAS Computer Planning Task Force

John Abercrombie—Assistant Dean, SAS Computing
F. Gerard Adams—Economics
Malcolm Campbell—History of Art
Robert C. Douglas—Assistant Dean, SAS Computing
Robert A. Kraft—Religious Studies
Roy K. Marshall—Director, SAS Computing Facility
Douglas S. Massey—Sociology
Karen L. Miselis—Vice Dean, SAS Planning and Analysis
Gerald J. Porter—Mathematics
William P. Reinhardt—Chemistry
Hugh H. Williams—Physics

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