ANNUAL REPORT OF THE COMMITTEE ON GRADUATE STUDIES TO THE FACULTY OF ARTS AND SCIENCES

October 20, 1992

The theme for this year's report is "Growth and Transformation: Expansion of Graduate Work, 1984-1992." After documenting the growth in graduate work of the past eight years, especially at the doctoral level, the report considers the implications of this expansion for the faculty as a whole and analyzes some of the ways that the new doctoral efforts complement and extend existing master's programs, whose scope and purposes we review. At a time when there is growing recognition nationally of the value of master's education, our master's programs have a long history of efficiently achieving significant goals.

I. Growth and Transformation: The Expansion of Graduate Work, 1984-1992

A. Growth in Number and Level of Degrees Awarded

With its successful proposal to the State Council of Higher Education in 1984 to expand the master's program in computer science to the Ph.D. level, this faculty embarked on a major expansion in doctoral education. Initiated in 1986, the computer science Ph.D. was followed by the addition of doctoral programs in American Studies (1988) and Applied Science (1990). Also, in 1991 the two-year Thomas Jefferson Program in Public Policy enrolled its first class of students. Since the 1986-87 academic year, the number of FTE students in all of our graduate programs has increased by more than fifty percent and the number of doctoral students has more than doubled. This growth in enrollment is also reflected in a growth in the number of degrees awarded, most significantly Ph.D.s.

Program Growth	1986-87	1991-92	% Growth
Degrees Awarded			
Master's	80	98	22%
Ph.D.	8	19	137%
Student FTEs	**Fall 1986**	**Fall 1992 (preliminary)**	**% Increase**
First Graduate	196	315	60%
Doctoral	79	171	116%
Total	275	486	76%

B. Prospects

Of the 19 doctorates awarded last year, 9 were in history, 3 in computer science, and 7 in physics. The Computer Science, American Studies and Applied Science programs are capable of producing at least 5 Ph.D.s per-year when they reach their maturity within the next 5 years. Since Physics and History should be responsible for no fewer than 5 Ph.D.s per-year, we expect to graduate 25-30 Ph.D.s once the students currently enrolled in the new programs move through the doctoral "pipeline." Indeed, the first Ph.D. in Applied Science was awarded in August of 1992. Since for most of the last two decades Arts and Sciences has averaged 8-10 Ph.D.s per-year, this year's growth and that projected for the

following years represents a significant increase and a confirmation of this faculty's doctoral status. In addition, the Virginia Consortium for Professional Psychology, of which we are a member, annually awards 8-10 Doctor of Psychology degrees.

C. Doctoral Education: A Widely Shared Opportunity

Whereas less than a decade ago, the only faculty supervising Ph.D. candidates were in History and Physics, now that opportunity is widely shared. Faculty in Computer Science and Psychology are responsible for doctoral education, and the American Studies and Applied Science programs draw from many additional departments. Our first Ph.D. in Applied Science, for instance, worked primarily with faculty in Mathematics. Similarly, the first three students to pass comprehensive examinations and undertake dissertation work in American Studies are supervised by faculty from the English Department. Faculty from the Sociology Department, working with the American Studies committee, have taken primary responsibility for supervising the study of a new doctoral student. Last year the Anthropology Department and American Studies jointly supported a master's candidate in Anthropology, who has now entered the American Studies doctoral program. Several faculty members in Chemistry supervise doctoral students in Applied Science. Faculty from Biology have supervised doctoral students through the School of Marine Science and plans are underway to enhance that avenue for doctoral education. A major consequence of the growth in our graduate programs during the past eight years has been the increasing participation of faculty from many departments in doctoral education.

D. Curricular Change through Interdisciplinary Programs: Atmospheric Science

A second consequence of these changes, and particularly the flexibility afforded by interdisciplinary programs, is the opportunity to develop new sub-specialties within larger programs. An example is the formal implementation this year of a track in Atmospheric Science within the Applied Science program. Developed by faculty in Chemistry, Computer Science, Physics, and researchers in the Atmospheric Sciences Branch at NASA-Langley, this program offers course work for both undergraduate and graduate students. Several full-time doctoral students have enrolled, and the program also serves the large professional staff employed at Langley. Ten new courses in atmospheric science are described in the second section of the report. We expect to see steady growth in this new part of the Applied Science program.

E. Effects of Recent Changes on Existing Graduate Programs

What have been the consequences for our continuing programs of the addition during the past eight years of three new doctoral programs and the Public Policy Program? We address this question from several perspectives: 1) programmatic cooperation; 2) resource allocation; and 3) analysis of master's program objectives and outcomes.

1. New Opportunities and Programmatic Cooperation

The four new programs have made available new opportunities for students in the established programs. The Applied Science and Computer Science programs have brought new course opportunities for students in the other science programs, both graduate and undergraduate. American Studies similarly complements the work in several programs, notably History, English, Sociology, and Anthropology. Students in the Government and Sociology graduate programs benefit from the new Public Policy courses. One non-academic, but nevertheless significant benefit of the expansion of graduate programs has been the development of a larger, more diverse graduate student community.

As noted above, the new interdisciplinary doctoral programs have strengthened several existing master's programs through the opportunities that they make possible for students to combine a master's program in an established discipline with an interdisciplinary doctoral program. Graduates of our Anthropology, English, and Sociology programs have remained at William and Mary for doctoral work in American Studies. The Applied Science program has enrolled graduates of the Chemistry master's program.

2. Master's Programs: The Student Financial Aid Deficit

The need to provide adequate graduate financial aid to three new doctoral programs and to Public Policy has meant that funding for master's programs has increased only marginally. Necessarily, our first priority in investing new resources has been to support the new programs. Increases in tuition of the past years have absorbed the small amounts of new funding that have been available for the master's programs, and inflation continues to erode the students' purchasing power. Since our master's programs were not well funded to begin with, they need new funding to remain competitive. We do not have the room here to document the needs of each program, but we cite the example of the Mathematics Department's program in operations research as representative. Competing institutions are able to offer stipends in the range of 10 to 11 thousand per academic year. We are able to offer at most $6,000. We have funds to support only 5 students per-year. Program faculty would like to have in residence at least 15-20 students to provide an optimum learning situation. Still, because of its high quality and the expanding opportunities that an operations research degree makes possible, our program attracts a large number of applicants, 73 for 1991. Lack of financial aid means that the Mathematics Department regularly loses some very able students who would like to enroll here. Yet, through much hard work, we do enroll a high quality student body, which this semester includes 16 full-time and 1 part-time students. We have been fortunate in this regard in enrolling each year several students whose tuition is paid by an external agency, such as the military, and several others who enroll with no aid. This distinctive program clearly merits a new investment of graduate student aid funds. Other master's programs face similar challenges.

Faculty in master's programs have redoubled their efforts to secure external funding for graduate students. Opportunities made available through Virginia Work Study have been particularly helpful in Psychology, Government, English, Public Policy and Sociology. We are appreciative that for 1992-93, the graduate aid budget did include a small inflation adjustment for master's

programs to reflect the erosion caused by the increase in tuition. For 1993-94 and beyond we will request an increase of university funds for master's programs, even as program faculty aggressively seek external funds.

3. Master's Programs: Objectives and Outcomes

Early in 1993 Johns Hopkins University Press will publish A Silent Success: Master's Education in the United States, a study sponsored by the Council of Graduate Schools. Summaries of this study have been presented at CGS meetings and made available to graduate deans. Clifton Conrad, formerly a faculty member in William and Mary's School of Education, is the principal author. Another study is "The Master's Degree, The Comprehensive University, and the National Interest" prepared by several graduate deans from the California State system and published in the CGS Communicator. These studies argue that the master's degree, sometimes thought of as merely a consolation prize for failed Ph.D. students, actually serves several essential functions in our society. In an editorial last December, the Washington Post referred to Master's education as an overlooked American success story. For many students, certainly including those from disadvantaged backgrounds, a well-structured master's program provides an ideal first step toward the doctorate. Further, these studies document the importance of master's education as preparation for many careers, including secondary and community college teaching, industry, research, and public service. In some fields the master's degree is a terminal degree. We expect that master's education will be increasingly important in our "information society."

In identifying the marks of success in master's education, the studies describe characteristics of our own programs at William and Mary. Successful programs provide their students with a balance between course work and appropriate intensive research and internship experiences. Successful programs are also structured to include a "capstone" experience, such as a thesis. Perhaps the single most important factor in determining the success of particular master's programs is the strong belief of program faculty in the intrinsic value of their programs. At William and Mary, we have a history of valuing our master's programs and so these new studies provide confirmation of the value of what long has been in place.

Focusing on master's programs in non-doctoral departments, we describe some of the ways that these programs are serving the needs of their students, the College, and the society at large.

Of the 98 master's degrees awarded in 1991-92 by this faculty, 56 were in non-doctoral departments: 7 in anthropology, 5 in biology, 5 in chemistry, 11 in English, 10 in government, 6 in mathematics, 7 in psychology, and 5 in sociology. (At the May 1993 Commencement we expect to award between 15-20 Master of Public Policy degrees.)

a. Anthropology. Graduates of the program, which specializes in historic archeology, are in demand in the growing field of contract archeology and cultural resources management. Approximately two-thirds of the graduates go directly into professional positions and one-third to Ph.D. programs, several at William and Mary. The graduate program in Anthropology works closely with the

Archeological Project Center, which last year performed approximately one million dollars of work for a large number of external agencies. The department devotes a portion of its share of overhead funds from the Project Center to the support of graduate students and Colonial Williamsburg supports two students annually. Also, graduate students assist on archeological investigations conducted by the Department in the Caribbean. Graduate students also provide some help to instructors in the Department's large introductory courses. The program is recognized as one of the leading such programs in the nation.

b. **Biology.** Approximately half of the graduates of the Biology department's two-year master's program enroll in Ph.D. programs elsewhere. Other graduates go to medical school or careers in resource management and biomedical science. All of the Graduate Assistants work in the department's undergraduate laboratories. Beginning with the 1992-93 academic year, the department has added a non-thesis (32 credit hours) track leading to the M.S.

c. **Chemistry.** Most students in the Chemistry department's master's program are able to complete their work during two summer sessions and one academic year. During the summers students are engaged full-time in research and are supported by external funds. During the academic year, graduate assistants devote approximately 20 hours per-week to their duties as teaching assistants. Approximately one-third of the graduates enter medical school, another third enter private industry, where the master's degree commands a 25% increase in starting salary, and the remaining third enroll in doctoral programs, including this university's Applied Science Program.

d. **English.** Approximately half of the graduates (11 in 1991-92) go on to Ph.D. programs, with some "migrating" to our own program in American Studies. Others teach in high schools or go on to careers in the private sector, many in publishing. Graduate assistants are assigned to the Writing Resources Center, Eighteenth Century Life, Language and Communication, Private Libraries of the English Renaissance, Verse, and faculty research projects in the department. Other graduate assistants work as research assistants. Through Virginia Work Study, other students are employed at the Adult Skills Center and at Lafayette High School.

e. **Government.** The Department was responsible for 10 Master's degrees in 1991-92. Typically, half of the graduates enter Ph.D. programs, with the others going directly to careers in governmental agencies, both in the United States and abroad. Graduate Assistants serve as research assistants to faculty in areas of mutual interest. Through Virginia Work Study the department has significantly increased its budget by securing internships with governmental agencies.

f. **Mathematics.** The Mathematics program is centered on operations research, a discipline that is proving to be in considerable demand in government, military, and private sectors. Most of the 6 graduates each year enter the private sector, although some teach on the high school or junior college level. Students work as tutors for the undergraduate program.

g. Psychology. This two-year pre-doctoral program awarded 7 degrees last year. Historically, our graduates are successful in gaining acceptances to competitive doctoral programs elsewhere. Eastern State Hospital (ESH) provides six assistantships annually, and these are supplemented with approximately $25,000 in funds from the Virginia Work Study Program. Students not assigned to ESH serve as laboratory assistants in the Department. The Department considers their work and assistance to be of critical importance to its undergraduate teaching mission. The primary focus for graduate students is research and many students present papers and contribute to the professional literature.

h. Sociology. The Department, which awarded 5 degrees last year, has a good record of preparing its graduates for doctoral programs elsewhere. Recently it developed research-based internships at such agencies as the Peninsula Agency for Alcoholism and the Virginia Department of Social Services. Graduate assistants are assigned primarily to faculty research projects.

Conclusion. The past eight years have witnessed a significant growth in doctoral education at William and Mary. Faculty from many departments are directing doctoral students and there are opportunities for the addition of new tracks or emphases within our programs. Cooperative arrangements between some of the master's programs and the interdisciplinary doctoral programs have brought a new dimension to the overall structure of graduate work at William and Mary.

II. Awards

Two doctoral candidates, Sharon Zuber, American Studies, and John Barrington, History, were selected by the State Council of Higher Education as Commonwealth Fellows and will receive awards of $5,000. Eleven fellows were selected from the Commonwealth's six doctoral universities.

III. Diversity

The Graduate Dean and program directors work actively to recruit students from underrepresented groups and this year we have made significant progress. The Graduate Dean established a Student Advisory Committee on Diversity. Its purposes are to assist in recruiting, identify issues or concerns for the Committee on Graduate Studies and the administration to address, and plan programs to support professional development. To encourage undergraduate students from underrepresented groups to attend graduate school, we have planned a program, "Examining the American Experience: Opportunities for Graduate Study," which we will host on November 12.

IV. DATA ON STUDENTS AND DEGREES

A. ADMISSIONS - Fall Semester 1992

DEPARTMENT	[1]NUMBER APPLICANTS	[2]NUMBER ACCEPTED	NUMBER MATRICULATED
AMERICAN STUDIES	167	51	23
ANTHROPOLOGY	48	16	9
APPLIED SCIENCE	37	8	4
BIOLOGY	29	24	14
CHEMISTRY	17	12	11
COMPUTER SCIENCE	199	49	18
ENGLISH	104	28	18
GOVERNMENT	75	27	12
HISTORY	133	36	22
MATHEMATICS	60	31	9
PHYSICS	226	26	17
PSYCHOLOGY	66	16	11
PUBLIC POLICY	41	32	21
SOCIOLOGY	24	16	10
TOTALS	1226	372	199
PSY.D. PROGRAM[3]	196	14	11

[1]Figures based on completed applications for fall admission as reported by each graduate department.

[2]Figures include all applicants offered admission as reported by each graduate department.

[3]Total in Consortium.

B. AVERAGE UNDERGRADUATE GRADE POINT
AVERAGE OF ENTERING STUDENTS (4.0 SCALE)

DEPARTMENT	FALL 1990	FALL 1991	FALL 1992
AMERICAN STUDIES	3.29 (22 of 26)	3.39 (20 of 21)	3.56 (14 of 20)
ANTHROPOLOGY	3.20 (11 of 13)		3.27
APPLIED SCIENCE	3.18 (4 of 6)	3.57 (7 of 9)	3.43
BIOLOGY	3.20	2.97	3.18
CHEMISTRY	2.78	2.90	2.93
COMPUTER SCIENCE	3.63	3.43	3.33
ENGLISH	3.38	3.43 (15 of 16)	3.52
GOVERNMENT	3.33	3.16 (10 of 11)	3.48 (11 of 12)
HISTORY	3.52 (18 of 20)	3.66	3.39 (18 of 21)
MATHEMATICS	3.33 (7 of 8)	3.38	3.51
PHYSICS	3.41 (8 of 10)	3.18 (11 of 12)	3.26
PSYCHOLOGY	3.37	3.26	3.34
PSY.D. PROGRAM	3.57	3.44	3.20
PUBLIC POLICY	----	3.19 (18 of 19)	3.28 (20 of 21)
SOCIOLOGY	3.16	3.74	3.13

C. AVERAGE GRADUATE RECORD EXAMINATION SCORES OF ENTERING STUDENTS[1]

DEPARTMENT	FALL 1991 VERB	MATH	ANALY	ADV	FALL 1992 VERB	MATH	ANALY	ADV
AMERICAN STUDIES	638 (19 of 21)	553 (19 of 21)	626 (18 of 21)	---	642 (18 of 20)	591 (18 of 20)	637 (18 of 20)	---
ANTHROPOLOGY	607 (7 of 11)	633 (7 of 11)	657 (6 of 11)	---	621 (7 of 9)	549 (7 of 9)	619 (7 of 9)	---
APPLIED SCIENCE	512	762	613	---	513 (4 of 5)	680 (4 of 5)	595 (4 of 5)	---
BIOLOGY	580 (5 of 6)	648 (5 of 6)	668 (5 of 6)	664 (62%) (5 of 6)	558	564	584	614 (45%)
CHEMISTRY	---	---	---	---	NRD	NRD	NRD	NRD
COMPUTER SCIENCE	540	678	626	661 (68%) (9 of 25)	584	704	648	NRD
ENGLISH	676 (15 of 16)	591 (15 of 16)	645 (15 of 16)	578 (68%) (13 of 16)	661	566	637	563 (69%)
ERNMENT	603	573	648	---	623 (11 of 12)	607 (11 of 12)	652 (11 of 12)	NRD
HISTORY	638	562	643	549 (72%) (14 of 17)	638	590	635	542 (70%) (17 of 21)
MATHEMATICS	485 (6 of 7)	715 (6 of 7)	687 (6 of 7)	NRD	520 (7 of 9)	671 (7 of 9)	690 (7 of 9)	NRD
PHYSICS	543 (9 of 12)	730 (9 of 12)	631 (8 of 12)	716 (70%) (8 of 12)	597	700	626	598 (43%)
PSYCHOLOGY	517	536	596	563 (58%) (4 of 7)	577	558	595	578 (66%) (10 of 11)
PSY.D.	622	565	604	600 (70%)	567	570	556	627 (82%)
PUBLIC POLICY	571 (10 of 19)	641 (10 of 19)	642 (10 of 19)	---	576 (17 of 21)	625 (17 of 21)	622 (17 of 21)	---
SOCIOLOGY	543	578	588	---	492	491	536	NRD

[1]Table includes all regular and provisional students. Scores on the advanced portion of the GRE are not reported unless at least 70% of the enrolling students took the test.

D. REGISTERED REGULAR & PROVISIONAL GRADUATE STUDENTS[1]
Fall 1990 to Fall 1992

DEPARTMENT	FALL 1990	SPRING 1991	FALL 1991	SPRING 1992	FALL 1992
AMERICAN STUDIES	43	33	42	41	53
ANTHROPOLOGY	17	16	14	12	14
APPLIED SCIENCE	6	8	16	21	22
BIOLOGY	18	18	16	17	25
CHEMISTRY	10	8	10	9	13
COMPUTER SCIENCE	57	60	68	67	66
ENGLISH	27	26	24	23	23
GOVERNMENT	19	15	20	16	17
HISTORY	59	57	52	51	55
MATHEMATICS	20	11	12	10	17
PHYSICS	47	45	52	48	60
PSYCHOLOGY	19	19	19	19	16
PUBLIC POLICY	--	--	19	19	40
SOCIOLOGY	12	11	9	11	15
A & S TOTALS	354	327	373	364	436
PSY.D. PROGRAM[2]	51	45	53	46	54

NOTE: The Computer Science department now enrolls most of the students listed previously under Applied Science. The Applied Science program now enrolls interdisciplinary students in the sciences.

[1]Totals include both full-time and part-time registration.

[2]Total in Consortium.

E. GRADUATE DEGREES CONFERRED 1991-92

DEPARTMENT	DEGREE	AUGUST 1991	DECEMBER 1991	MAY 1992	TOTAL
AMERICAN STUDIES	M.A.	1	0	7	8
	Ph.D.	0	0	0	0
ANTHROPOLOGY	M.A.	2	2	3	7
APPLIED SCIENCE	M.A.	0	1	0	1
	M.S.	0	0	0	0
	Ph.D.	0	0	0	0
BIOLOGY	M.A.	1	0	4	5
CHEMISTRY	M.A.	1	3	1	5
	M.S.	0	0	0	0
COMPUTER SCIENCE	M.S.	0	5	8	13
	Ph.D.	2	0	1	3
ENGLISH	M.A.	4	3	4	11
GOVERNMENT	M.A.	5	1	4	10
HISTORY	M.A.	3	2	5	10
	Ph.D.	0	5	4	9
MATHEMATICS	M.A.	0	0	0	0
	M.S.	1	4	1	6
PHYSICS	M.A.	0	0	0	0
	M.S.	1	9	0	10
	Ph.D.	1	4	2	7
PSYCHOLOGY	M.A.	1	1	5	7
	Psy.D.	2	4	1	7
PUBLIC POLICY	M.P.P.	0	0	0	0
SOCIOLOGY	M.A.	0	3	2	5
TOTALS	M.A.	18	16	35	69
	M.S.	2	18	9	29
	M.P.P.	0	0	0	0
	Ph.D.	3	9	7	19
	Psy.D.	2	4	1	7

E. GRADUATE DEGREES CONFERRED 1991-92 (cont'd.)

TOTAL NUMBER OF DOCTORATES CONFERRED
AUGUST 1991 THROUGH MAY 1992

Arts and Sciences	- 19 Ph.D., 7 Psy.D.
Education	- 31 Ed.D.
Marine Science	- 6 Ph.D.

M.A. IN EDUCATION[1]

Secondary School Teaching - 39

[1]Degree candidates for the M.A. in Education (Secondary School Teaching) take 12 hours of course work in Arts and Sciences.

F. GRADUATE DEGREES AWARDED DURING THE LAST 10 YEARS[1]
(August - June)

DEPARTMENT	PROGRAM INITIATED	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	90-91	91-92	8/92	TOTAL SINCE AUG. 1982
AMERICAN STUDIES	1982-MA		1	4	5	2	3	4	11	14	8	1	53
	1988-PhD							0	0	0	0	0	0
ANTHRO-POLOGY	1979-MA	3	5	1	4	8	4	8	9	8	7	0	57
APPLIED SCIENCE	1970-MA/MS	9	10	1	2	0	0	0	0	1	1	0	24
	1990-PhD									0	0	1	1
BIOLOGY	1963-MA	6	5	8	7	2	7	5	10	4	5	2	61
CHEMISTRY	1964-MA/MS	1	2	9	5	5	4	5	7	4	5	3	50
COMPUTER SCIENCE	1984-MS			9	10	19	10	15	19	15	13	1	111
	1986-PhD					0	1	0	3	0	3	1	8
ENGLISH	1970-MA[2]	6	7	9	5	8	9	10	9	18	11	3	95
GOVERNMENT	1966-MA	6	1	1	5	3	6	8	8	9	10	0	57
HISTORY	1955-MA	10	7	11	5	14	13	7	16	13	10	2	108
	1967-PhD	2	3	2	1	4	1	1	5	2	9	1	31
MATHEMATICS	1961-MA/MS	5	6	6	4	7	2	9	5	10	6	0	60
PHYSICS	1959-MA/MS	5	10	11	9	5	8	6	14	8	10	0	86
	1964-PhD	7	6	5	6	4	5	3	6	6	7	0	55
PSYCHOLOGY	1953-MA	7	2	9	5	4	6	3	11	5	7	2	61
	1978-PsyD	5	9	4	8	8	8	10	14	8	7	2	83
PUBLIC POLICY	1991-MPP										0	0	0
SOCIOLOGY	1967-MA	6	2	5	2	3	4	6	5	5	5	2	45
A&S TOTALS:	MA-MS-MPP	64	58	84	68	80	76	86	124	114	98	16	868
	PhD	9	9	7	7	8	7	4	14	8	19	3	95
	PsyD	5	9	4	8	8	8	10	14	8	7	2	83

[1]See Table E for M.A. in Education degrees.

[2]Earlier Program suspended in 1963.

CURRICULUM CHANGES
Approved for 1992-93

NEW COURSES

AMERICAN STUDIES

523. The Museum in the United States. Spring (3) Mr. Wallach.

532. The Authority of the Word: Print, Culture, and Society in Europe and America. Fall (3) Mr. Gross.

543. Racism, Colonialism, and Anti-Semitism. Spring (3) Mr. Stanfield.

545. The Making of a Religion: Southern Literature and Culture. Fall (3) Ms. S.V. Donaldson.

APPLIED SCIENCE

521. Metallic Materials Characterization. Fall (3) Mr. Henkel.

526. Introduction to Thin Film Materials. Spring (3) Mr. Manos.

531. Introduction to Atmospheric Science: Chemistry and Radiation. Fall (3) Mr. Levine.

533. Introduction to Atmospheric Science: Structure and Dynamics. Fall (3) Mr. Grose.

534. Atmospheric Radiative Transfer I. Spring (3) Mr. Barkstrom.

536. Geophysical Fluid Dynamics. Spring (3) Mr. Grose.

559. Research. Fall and Spring (Hours and credits to be arranged) Staff.

581. Special Topics in Atmospheric Science. Fall (3) Mr. Levine and Staff.

582. Measurement of Material Properties. Spring (3) Mr. Henkel.

631. Atmospheric Radiative Transfer II. Fall (3) Mr. Barkstrom. Offered 1993-94.

633. Chemistry of the Troposphere. Fall (3) Mr. Levine. Offered 1993-94.

634. Chemistry of the Middle Atmosphere. Spring (3) Mr. Eckman and Mr. Zawodny. Offered 1993-94.

635. Troposphere Dynamics. Fall (3) Mr. Pierce. Offered 1993-94.

636. Middle Atmosphere Dynamics. Spring (3) Mr. Grose. Offered 1993-94.

637. Remote Sensing of the Atmosphere. Fall (3) Mr. Connor. Offered 1993-94.

BIOLOGY

Implementation of a non-thesis track leading to the M.S. degree. Will probably take 1-1/2 years to complete.

CHEMISTRY

551. Chemistry of Macromolecules. Renumbered; now 511. (Apsc 511)

562. Macromolecules. Renumbered; now 512. (Apsc 512)

PSYCHOLOGY

620. Colloquium. Changed grading to pass/fail.

Committee on Graduate Studies:

Christopher Abelt, Chemistry
Henry Aceto, VIMS
Norman Barka, Anthropology
Donald Baxter, Government
David Finifter, Public Policy
Robert Gross, American Studies
Stanton Hoegerman, Biology
Gerald Johnson, Geology
Sidney Lawrence, Mathematics
Chris MacGowan, English
Dennis Manos, Applied Science
Robert Noonan, Computer Science
Charles Perdrisat, Physics
Ellen Rosen, Psychology
John Selby, History
Kathleen Slevin, Sociology
Neill Watson, Clinical Psychology
Robert J. Scholnick, Chair