

APPENDIX B

**FOUR-YEAR COLLEGE AND UNIVERSITY QUESTIONNAIRE
(SEE PAGE B-8 FOR REMEDIAL QUESTIONNAIRE)**

SURVEY OF UNDERGRADUATE PROGRAMS
IN
THE MATHEMATICAL AND COMPUTER SCIENCES
1985

General Instructions

You are asked to report on programs in the mathematical and computer sciences (including statistics) under the cognizance of your department. This same questionnaire is being sent to each department in the mathematical or computer sciences on your campus which is listed in the 1985 Mathematical Sciences Professional Directory published by the AMS. It is not being routinely sent to computer centers or to non-departmental groups or programs listed there. Do not include data for branches or campuses of your institution that are geographically or budgetarily separate. Questions 1-9 are generally quantitative and non-judgmental in nature. Questions 10-13 involve more qualitative answers.

Please return completed questionnaire by 27 November 1985 to:

Conference Board of the Mathematical Sciences
1529 Eighteenth Street, N.W.
Washington, D.C. 20036
(202) 387-5200

* * *



- | | |
|---|-------|
| 1. Name of your institution: _____ | 16-18 |
| Name of your department: _____ | _ 19 |
| 2. Changes in Administrative Structure: | |
| (a) Between 1980 and 1985 was your department, together with one or more other departments, consolidated into a larger administrative unit (e.g., a Division of Mathematical Sciences or Department of Electrical Engineering and Computer Science)? Yes ___ No ___ | _ 20 |
| Names of other departments involved in this consolidation _____ | |
| Name of larger administrative unit _____ | |
| (b) Between 1980 and 1985 was your department divided with part of your faculty entering a new department (e.g., a new department of Statistics or Computer Science)? Yes ___ No ___ | _ 21 |
| Name of new department(s) _____ | |
| (c) If you answered no to (a) and (b), was your present department created since 1980? Yes ___ No ___ | _ 22 |
| (d) Other major changes in administrative structure. Please specify:

_____ | |

3. Regular Undergraduate Program Courses, Fall 1985

Instructions for Question 3:

(a) The undergraduate courses in column (1) in the following table are listed in three groups corresponding roughly to a division into mathematics, statistics, and computer science. Within each group they are listed in approximate "catalog order" for your convenience in locating a listing which is a reasonable approximation to your offerings. Additional blank spaces are provided to permit you to write in names of courses which do not fit reasonably under some listed title.

For the purpose of this survey, consider as a single course, instruction in a particular area of mathematics which you offer as a sequence of two or more parts (e.g., calculus). Column (3) is to be used to indicate the number of sections of a course.

(b) For each course in column (1) that is being taught in the Fall of 1985 write in column (2) the total number of students who are enrolled in (any part of) the course this Fall. Thus, for a 2-semester sequence of calculus, Math 1 and Math 2, the enrollment in column 2 would be the sum of the Fall enrollments in Math 1 and in Math 2. Enter in column (3) the total number of sections of the course in the Fall of 1985. If a course is not being taught in the Fall but is expected to be taught during some other session of the current academic year, or was taught during the 1984-85 academic year, write S (for "sometimes") in column (2). If not taught during either of the academic years 1984-85 or 1985-86, write N. Each box in column (2) should contain an entry.

Name of Course (or equivalent)	Students Enrolled	Number of Sections
8. Elem. Functions, Pre-calc. math.		65-70
9. Math. for Liberal Arts		71-76
10. Finite Mathematics		6-11
11. Business Mathematics		12-17
12. Math. for Elem. School Teachers		18-23
13. Analytic Geometry		24-29
14. Other Pre-calc.		30-35

Calculus Level

15. Calc. (math., phys. sci., & engin.)		36-41
16. Calc. (bio., social & mgmt. sciences)		42-47
17. Differential Equations		48-53
18. Discrete Mathematics		54-59
19. Linear Alg. and/or Matrix Theory		60-65

Advanced Level

20. Modern Algebra		66-71
21. Theory of Numbers		72-77
22. Combinatorics		3
23. Graph Theory		6-11
24. Coding Theory		12-17
25. Foundations of Math.		18-23
26. Set Theory		24-29
27. Discrete Structures		30-35
28. History of Mathematics		36-41
29. Geometry		42-47
30. Math. for Sec. Sch. Teachers (methods, etc.)		48-53
		54-59

Undergraduate Courses

Name of Course (or equivalent) (1)	Total Number of Students Enrolled Fall 1985 (2)	Total Number of Sections (3)
1. Arithmetic		
2. General Math. (basic skills, operations)		
3. Elem. Algebra (High School)		
4. Intermed. Algebra (High School)		
Pre-calculus		
5. College Algebra		
6. Trigonometry		
7. Coll. Algebra & Trig., combined		

A. MATHEMATICS

Remedial

23-28
29-34
35-40
41-46
47-52
53-58
59-64

Name of Course (or equivalent) (1)	Total Number of Students Enrolled Fall 1985 (2)	Total Number of Sections (3)
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C. COMPUTER SCIENCE		
Lower Level		
55. Computers & Society		
*,** 56. CS1 '78 or CS1 '84 (Comp. Prog. I)		
* 57. CS2, '78 (Comp. Prog. II)		
** 58. CS2, '84		
59. Database Mgmt. Systems		
60. Discrete Mathematics		
61. Other lower level service courses		

Middle Level		
62. Intro. to Comp. Systems (CS3)		
63. Assembly Lang. Programming		
64. Intro. to Comp. Organization		
65. Intro. to File Processing (CS5)		

Upper Level		
66. Operating Sys. & Comp. Architect.		
67. Operating Systems		
68. Computer Architecture		
69. Data Structures (CS7)		
70. Survey of Prog. Languages		
71. Computers & Society (CS9)		
72. Operating Sys. & Comp. Arch. II (CS10)		
73. Principles of Database Design		

*78 refers to courses described in Curriculum '78, *Communications of the Association for Computing Machinery*, Vol. 22, No. 3 (March 1979) 147-166.
 **84 refers to courses described in *Communications of the Association for Computing Machinery*, Vol. 28, No. 8 (August 1985) 815-818.



6-11	6-11
12-17	12-17
18-23	18-23
24-29	24-29
30-35	30-35
36-41	36-41
42-47	42-47
48-53	48-53
54-59	54-59
60-65	60-65
66-71	66-71
72-77	72-77
6-11	6-11
12-17	12-17
18-23	18-23
24-29	24-29
30-35	30-35
36-41	36-41
42-47	42-47

Name of Course (or equivalent)	Students Enrolled	Number of Sections
31. Mathematical		
32. Logic		
33. Advanced Calculus		
34. Advanced Math. for Eng. & Phys.		
35. Vector Analysis, Linear Algebra		
36. Advanced Diff. Equations		
37. Partial Diff. Equations		
38. Numerical Analysis		
39. Applied Mathematics, Math. Modelling		
40. Operations Research		
41. Complex Variables		
42. Real Analysis		
43. Topology		
44. Senior Seminar/In-depend. Stud. Math.		
45. Other Mathematics		

3.A. TOTAL NO. OF MATHEMATICS SECTIONS

60-65	60-65
66-71	66-71
72-77	72-77
6-11	6-11
12-17	12-17
18-23	18-23
24-29	24-29
30-35	30-35
36-41	36-41
42-47	42-47
48-53	48-53
54-59	54-59
60-65	60-65
66-71	66-71

3.B. TOTAL NO. OF STATISTICS SECTIONS

B. STATISTICS

45. Elem. Stat. (no Calc. prereq.)		
46. Prob'y (& Stat.) (no Calc. prereq.)		
47. Math. Stat. (Calculus)		
48. Probability (Calculus)		
49. Stochastic Processes		
50. Applied Stat. Analysis		
51. Design & Analysis of Experiments		
52. Regression (and Correlation)		
53. Senior Seminar/In-depend. Stud. Stat.		
54. Other Statistics		

4. **Instructional Formats**
 In the table below are listed five courses from the list of question 3. For each course please enter the number of students taught during the Fall of 1985 in each of the formats listed in column (1). In the last line of the table enter the total enrollment in each of these courses in the Fall of 1985. If a course was not offered by your department during this time, enter zero. The numbers in line 7 should be the numbers reported in 3 above.

	Number of Students Enrolled: Fall of 1985					
	(1)	(2)	(3)	(4)	(5)	(6)
	Coll. Alge. (5)	Calculus: (Math., Phys., Sc.) (15)	Calculus: (Bio., Soc., Mgmt.; Sc.) (16)	CS: Comp. Prog. I (96)	Elem. Stat. (45)	
1. Small Class (Less than 40 students)						21-40
2. Large Class (Between 40 and 80 students)						41-60
3. Lecture (Over 80 students) without recitation or quiz sections						61-80
4. Lecture (Over 80 students) with recitation or quiz sections						10 6-25
5. Self Paced Instruction						26-45
6. Other Format						46-65 66-85
7. Total enrollment in course, Fall '85						11 6-7 8-9 10-11 12-13 14-15 16-17 18-19

5. **Use of Computers**
 Indicate the number of sections in the courses listed below in which the use of computers (micros/minis/mainframes) is required. (Courses are selected from question 3 where you listed total sections offered.)

	Number of Sections
A) College Algebra (5)	_____
B) Calculus (Math., Phys. Sci., Engineering) (15)	_____
C) Differential Equations (17)	_____
D) Discrete Mathematics (18)	_____
E) Linear Algebra and/or Matrix Theory (19)	_____
F) Numerical Analysis (37)	_____
G) Elementary Statistics (45)	_____

Name of Course (or equivalent)	Students Enrolled	Number of Sections
74. Artificial Intelligence (CS12)	48-53	
75. Discrete Structures	54-59	
76. Algorithms (CS13)	60-65	
77. Software Design & Develop. (CS14)	66-71	
78. Principles of Prog. Languages	72-77	
79. Automata, Computability, & Formal Lang. (CS16)	18	
	6-11	
80. Automata Theory	12-17	
81. Numerical Math.: Analysis (CS17)	18-23	
82. Numerical Methods	24-29	
83. Numerical Math.: Linear Alg. (CS18)	30-35	
84. Compiler Design	36-41	
85. Networks	42-47	
86. Modelling & Simulation	48-53	
87. Computer Graphics	54-59	
88. Semantics & Verification	60-65	
89. Complexity	66-71	
90. Computational Linguistics	72-77	
91. Senior Seminar/In-depend. Stud. CS	9	
92. Other Computer Science	6-11	
	12-17	
	18-20	

3.C. TOTAL NO. OF COMPUTER SCIENCE SECTIONS

6. Questions on Mathematical and Computer Science Faculty, Fall 1985

A. Report the number of full-time mathematical and computer science faculty members at or above the rank of assistant professor in your department in the table below, by highest degree and subject field in which it was earned:

Highest Degree	Subject Field	Math.	Stat.	Comp. Sci.	Math. Ed.	Another field
Doctor's degree						
Master's degree						
Bachelor's degree						

B. Other full-time faculty: Report the number of other full-time faculty in your department, e.g., instructors, not counted in (A), by highest degree and subject field in which it was earned:

Highest Degree	Subject Field	Math.	Stat.	Comp. Sci.	Math. Ed.	Another field
Doctor's degree						
Master's degree						
Bachelor's degree						

C. How many part-time faculty do you have in your department? _____

D. How many of the total sections in each of Mathematics, Statistics, and Computer Science (see question 3) were taught this Fall by the faculty members in A, B, and C of this question?

	No. of Sections Taught in		
	Mathematics	Statistics	Computer Science
Full-time Assistant Professor or above (A)			
Other Full-time (B)			
Part-time (C)			

Totals of columns should be totals from questions 3A, 3B, 3C, respectively.

E. Departmental Graduate Teaching Assistants (if none, check here _____ and go on to 7.)

- (a) Total number of teaching assistants in Fall, 1985 _____
- (b) Number who are graduate students in your department _____
- (c) Number who are graduate students in some other mathematical or computer science department. _____

F. Use of Departmental Graduate Teaching Assistants (GTA's)

Give the number of your GTA's by their principal teaching responsibility:

- (a) Teaching their own classes _____
- (b) Conducting quiz sections or recitation sections _____
- (c) Paper grading _____
- (d) Providing tutorial or other individual assistance to students _____
- (e) Other or no assigned duties _____

7. Age, Sex, and Ethnic Group of Full-time Faculty, Fall, 1985

Age	Under 30	30-34	35-39	40-44	45-49	50-54	55-59	60 & Over
Tenured, Doctorate								55-80 13
Tenured, Non-doctorate								6-21
Non-tenured, Doctorate								22-37
Non-tenured, Non-Doctorate								38-53
Men								54-69 14
Women								6-21
Amer. Indian/Alaskan native								22-37
Asian/Pacific Islander								38-53
Black (not of Hispanic orig.)								54-69
Hispanic								70-85 15
White (not of Hispanic orig.)								6-21

20-29
30-39
40-49

50-59
60-69
12
6-15
16-17

18-26
27-35
36-44

8. A. What is the expected (or typical) teaching load in credit hours for your full-time mathematical science and computer science faculty and GTA's (excluding thesis supervision):

	Mathematical Science		Computer Science	
	Per semester or quarter		Per semester or quarter	
(a) Professors				
(b) Associate Professors				
(c) Assistant Professors				
(d) Instructors with Ph.D.				
(e) Instructors without Ph.D.				
(f) Grad. Teaching Ass'ts.				

B. If there are significant departures from these expected teaching loads for certain classes of individuals, please describe:

9. Employment and Mobility of Departmental Faculty

A. Are there any new full-time mathematical science or computer science faculty in your department this year? Yes ___ No ___

If yes, during the previous year 1984-85 how many were:

- (1) enrolled in graduate school _____ Those with Ph.D.'s _____ Those without Ph.D.'s _____
- (2) faculty in an institution of higher ed. _____
- (3) holding postdoctoral study/research appointments _____
- (4) employed in non-academic positions _____
- (5) otherwise occupied _____

B. Of your full-time mathematical science and computer science faculty last year, are there any who are no longer part of your full-time faculty?

- Yes ___ No. If yes, how many: (Use the category that best applies.)
- (1) died, or retired _____ Those with Ph.D.'s _____ Those without Ph.D.'s _____
- (2) were visiting your department and returned to their regular department _____
- (3) are teaching in an institution of higher education _____
- (4) left for a non-academic position _____
- (5) returned to graduate school _____
- (6) are otherwise occupied _____

22-25
26-29
30-33
34-37
38-41
42-45
- 46

10. Availability of new faculty members for 1985-86. Please complete the following table.

	In Math.	In Stat.	In Comp. Sci.
How many full-time openings did you have for faculty for 1985-86?			
How many of these openings were you able to fill with full-time faculty members who met the advertised qualifications?			
How many of these openings did you fill with part-time faculty who otherwise met the advertised qualifications?			
How many of these openings did you fill with faculty who did not meet the advertised qualifications?			
How many of the openings were you unable to fill?			

18-23
24-29
30-35
36-41
42-47

11. How many bachelor's degrees with majors in a mathematical or computer science were awarded by your department between July 1984 and June 1985?

Major	Comp. Sci.	Math.	Stat.
Math. (general)		xxxxxxx	
Applied Math.		xxxxxxx	
Math. Ed.		xxxxxxx	
Comp. Sci.	xxxxxxx		
Statistics			xxxxxxx
Operations Research			xxxxxxx
Joint Comp. Sci. & Math.	xxxxxxx	xxxxxxx	
Joint Math. & Stat.	xxxxxxx	xxxxxxx	xxxxxxx
Joint Comp. Sci. & Stat.	xxxxxxx		xxxxxxx

Report the number of bachelor's degrees with major in:

Estimate number of those listed on left having at least the equivalent of a minor in:

51-60
61-70
71-80
6-15
16-25
26-35
36-45
46-55
56-65

12. Professional Activities

Below are listed some professional activities which departments may take into account in making recommendations on faculty advancement and/or salary decisions. Please rate each of the items on the 0-5 scale given by encircling a number, with 5 indicating that it is very important for most faculty in your department and is heavily weighted in advancement and/or salary decisions and 0 indicating little or no effect in advancement and/or salary decisions.

no problem	Scale	very important	no problem	major problem	no problem	major problem	18
							7
0 1 2 3 4 5	A.	Years of service	0 1 2 3 4 5	I.	Lack of quality of undergraduate majors	25	
0 1 2 3 4 5	B.	Classroom teaching performance	0 1 2 3 4 5	J.	Lack of quantity of undergraduate majors	26	
0 1 2 3 4 5	C.	Textbook writing	0 1 2 3 4 5	K.	Lack of quality of departmental grad. students	27	
0 1 2 3 4 5	D.	Giving talks at professional meetings	0 1 2 3 4 5	L.	Lack of quantity of departmental grad. students	28	
0 1 2 3 4 5	E.	Expository and/or popular articles	0 1 2 3 4 5	M.	Class size	29	
0 1 2 3 4 5	F.	Published research	0 1 2 3 4 5	N.	Remediation	30	
0 1 2 3 4 5	G.	Service to department and/or university (college)	0 1 2 3 4 5	O.	Library: holdings, access, etc.	31	
0 1 2 3 4 5	H.	Professional activities (participating in work of professional societies, public/gov't services in a professional capacity, etc.)	0 1 2 3 4 5	P.	Research funding	32	
0 1 2 3 4 5	I.	Undergraduate and/or graduate advising	0 1 2 3 4 5	Q.	Departmental support sources (travel funds, staff, secretary, etc.)	33	
0 1 2 3 4 5	J.	Supervision of graduate students	0 1 2 3 4 5	R.	Computer facilities for faculty use	34	
0 1 2 3 4 5		Problems of the mid 80's	0 1 2 3 4 5	S.	Access to networking facilities for research and communication	35	
0 1 2 3 4 5	A.	Losing full-time faculty to industry/gov't	0 1 2 3 4 5	T.	Upgrading/maintenance of computer facilities	36	
0 1 2 3 4 5	B.	Maintaining vitality of faculty	0 1 2 3 4 5	U.	Computer facilities for classroom use	37	
0 1 2 3 4 5	C.	Advancing age of tenured faculty	0 1 2 3 4 5	V.	Office/lab facilities	38	
0 1 2 3 4 5	D.	Lack of experienced senior faculty	0 1 2 3 4 5	W.	Classroom/lab facilities	39	
0 1 2 3 4 5	E.	Teaching load of full-time faculty					
0 1 2 3 4 5	F.	The need to use temporary faculty for instruction					
0 1 2 3 4 5	G.	Salary levels/patterns					
0 1 2 3 4 5	H.	Promotion/tenure process above department level					

Below are some concerns cited by many departments. Please rate each of the concerns on the 0 to 5 scale given by encircling a number, with 5 indicating a major and continuing problem for your department and 0 indicating no present problem.

no problem

major problem

0 1 2 3 4 5	I.	Lack of quality of undergraduate majors	25
0 1 2 3 4 5	J.	Lack of quantity of undergraduate majors	26
0 1 2 3 4 5	K.	Lack of quality of departmental grad. students	27
0 1 2 3 4 5	L.	Lack of quantity of departmental grad. students	28
0 1 2 3 4 5	M.	Class size	29
0 1 2 3 4 5	N.	Remediation	30
0 1 2 3 4 5	O.	Library: holdings, access, etc.	31
0 1 2 3 4 5	P.	Research funding	32
0 1 2 3 4 5	Q.	Departmental support sources (travel funds, staff, secretary, etc.)	33
0 1 2 3 4 5	R.	Computer facilities for faculty use	34
0 1 2 3 4 5	S.	Access to networking facilities for research and communication	35
0 1 2 3 4 5	T.	Upgrading/maintenance of computer facilities	36
0 1 2 3 4 5	U.	Computer facilities for classroom use	37
0 1 2 3 4 5	V.	Office/lab facilities	38
0 1 2 3 4 5	W.	Classroom/lab facilities	39

If you have found some question(s) difficult to interpret or to secure data for, please supply elucidating comments or suggestions which would be helpful to the Committee in future surveys:

If there are any concerns that you would like to discuss in more detail, please include them on a separate sheet.

Information supplied by: _____

Title and Department: _____

Institution and Campus: _____

Telephone: _____ Date: _____

REMEDIAL MATHEMATICS QUESTIONNAIRE

For Coding Only

- Give the name of the academic unit (or division) administering the remedial (developmental) mathematics program at your institution.
 - _____ (If not the mathematics dept., please answer b and c.) 25-26
 - Give time when unit was established
 - Before 1975 _____ 1975-79 _____ 1980-85 _____ 27
 - Does the unit report to the same academic administrator as does the mathematics department? Yes _____ No _____ 28
- Do you have follow-up studies on success rates of students in post-remedial math courses or on eventual graduation:
 - Yes (Give name of contact person. _____) 29
 - No _____
- For which standard course(s) do remedial mathematics courses prepare students?
 - (a) College Algebra _____ 30-31
 - (b) Elementary Functions _____ 32-33
 - (c) Precalculus _____ 34
- Staff qualifications and status (for remedial program only).
 - (a) Number of full-time faculty _____ 35-36
 - (b) Number of part-time faculty _____ 37-38
 - (c) Number of full-time faculty on tenure track _____ 39-40
 - (d) Number of full-time faculty who are tenured _____ 41-42
- Give numbers for full- and part-time faculty (combined) who staff the remedial mathematics program:

Highest Degree	Field of Degree	Mathematics	Math. Ed.	OTHER
Doctor's				
Master's				
Bachelor's				
No degree				

Please see reverse side.

6. Credit status of remedial courses. Please complete the following table:

Course Title	Is course load credit normally given?		Is credit toward graduation given?	
	YES	NO	YES	NO
Arithmetic				
General Math. (Basic Skills, Operations) Elementary				
Algebra (High School)				
Intermediate Algebra (High School)				
Other				

67
- 68
69
- 70
71
- 72
73
- 74
75
- 76

7. Remedial Course Enrollments: (If your unit filled out the main questionnaire, columns (2) and (3), rows (a) to (d), are from Question 3A there.)

(a)	Total No. of Students Enrolled Fall, 1985		Total No. of Sections	Total No. of Sections Taught by Part-time Faculty	No. Sections Taught by Part-time Faculty
	(2)	(3)			
Arithmetic					7-14
General Math. (Basic Skills, Operations)					15-22
Elementary Alg. (High School)					23-30
Intermed. Alg. (High School)					31-38
Other					39-46

Information supplied by: _____ Title & Dept.: _____

Institution & Campus: _____ Phone: _____

Date: _____

Please return completed questionnaire by 27 November 1985 to:

Conference Board of the Mathematical Sciences
1529 Eighteenth Street, N.W.
Washington, D.C. 20036