

Vol. II

CURRICULA IN HEALTH SYSTEMS

An Allied Health Professions
Special Training Project

Final Report
Covering the Period
July 1972 — June 1977

Supported by a National Priority Grant
AH 00242 from the
Division of Associated Health Professions
Bureau of Health Manpower
Health Resources Administration,
Department of Health, Education, and Welfare



Health Systems Research Center
Georgia Institute of Technology
Atlanta September 1977

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Selected HSRC Reports

Various publications of the Health Systems Research Center are available in either hard copy or microfilm from Xerox University Microfilms, 300 North Zeeb Road, Ann Arbor, Michigan 48106. When ordering a report from the list below, refer to the Hospital Abstract number.

Curricula in Health Systems Final Report, Special Training Project, USPHS Grant No. AH 00242, September 1977, (HA No. 18239 HE).

EMS System Data Requirements for Performance Evaluation, USPHS Grant No. HS 00715, December 1974, 86 pp. (HA No. 13565 OU).

Telemetry Utilization for Emergency Medical Services Systems, USPHS Grant No. HS 00715, June 1974, 64 pp. (HA No. 12484 OU).

Ambulance Placement Strategies for Emergency Medical Systems, USPHS Grant No. HS 00715, January 1974, 133 pp. (HA No. 11601 HE).

Dental Manpower Planning: A Systems-Analytic View, USPHS Grant No. AH 01056, May 1973, 218 pp. (HA No. 10250 MP).

An Improved Emergency Medical System for Metropolitan Atlanta, A Comprehensive Plan and Systems Design, Georgia Regional Medical Program, March 1973, 566 pp. (HA NO. 100150 OU).

Program in Hospital and Medical Systems Final Report and Evaluation, USPHS Grant No. AH 01056, February 1973, 238 pp. (HA No. 10050 MN).

Fiscal Controls for Hospital Departments, USPHS Grant No. AH 01056, October 1972, 203 pp. (HA No. 09499 AC).

Analysis of Optimal Radiographic Location Networks, USPHS Grant No. HS 00179, October 1971; Vol. I, II, III, and Parts 1-4 of Vol. IV, total of 562 pp. (HA No. RLO 7441-RLO 7447).

Systems Analysis of Medical Records in Georgia, USPHS Contract No. HSN 110-70-349, September 1971; Vol. I, II, and III, total of 487 pp. (HA No. MRO 7741-MRO 7743).

The Planning of Clinical Facilities for Medical Education: A Systems Approach, USPHS Grant No. AH 01056, August 1970, 349 pp. (HA No. MD2-5900).

Quantitative Methods for Evaluating Hospital Designs, USPHS Grant No. HM 00529, August 1969, 239 pp. (HA No. DE 1026).

Reports in Progress:

Evaluation of a Group Hospital Reimbursement Incentive Plan, Contract No. SSA-PMB-73-154, Office of Research and Statistics, Social Security Administration, DHEW.

Evaluation of the Role of Police in the EMS System, USPHS Grant No. HS 01767, National Center for Health Services Research, Health Resources Administration, DHEW.

CURRICULA IN HEALTH SYSTEMS

An Allied Health Professions
Special Training Project

Supported by a National Priority Grant
AH 00242 from the
Division of Associated Health Professions
Bureau of Health Manpower
Health Resources Administration

FINAL REPORT

July 1972-June 1977

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SUMMARY OF FINAL REPORT

This is the final report on the special training project, "Curricula in Health Systems," which was supported by Grant AH 00242 from the Division of Associated Health Professions of the Bureau of Health Manpower. The report covers the five-year period from 1 July 1972 through 30 June 1977, with emphasis upon the final year of the project.

The general objective of the project was to develop a viable, academically sound, socially relevant, educational program which would prepare students for professional careers in the analysis, design, and improvement of operational and managerial systems of health care delivery in hospitals and in other health service organizations, as a means of improving the health care delivery system. Judging from all available indicators, this objective has been fully achieved. Indeed, project goals have been exceeded in a number of respects, including the development of a unique premedical option, the introduction of a health planning option, and the establishment of the nation's first School of Health Systems.

Specific objectives of the project were pursued through project activities consisting of the planning, establishing, and developing of a baccalaureate curriculum in health systems, a health systems track (or minor) for undergraduate students majoring in various curricula, a set of health systems courses, and a master's degree program with a major in health systems. These activities were built upon and were strengthened by an established pattern of health systems minors for master's and doctoral students which had been developed under a previous training project, "Program in Hospital and Medical Systems," supported by this same sponsor from 1967 to 1972.

The new "Program in Health Systems" was established as an organizational unit of the College of Engineering in September 1972, prior to and in anticipation of the training grant which was activated on 1 January 1973. Initial versions of the B.S. Curriculum, the Health Systems Track, and a set of fifteen HS courses were approved by the Institute Curriculum Committee and the Academic Senate in October 1972. The first health systems major was admitted to the Program in November 1972, and the first health systems course was offered in the Winter Quarter 1973.

During succeeding quarters, courses of the initial set were improved, additional courses were designed and introduced, arrangements were made for field training sites, and cooperative relationships were established within Georgia Tech and with the outreach community. Progress in all of these areas was facilitated by previously developed relationships and programs of the Health Systems Research Center, including its interdisciplinary and interinstitutional programs of research, continuing education, and community outreach, and its affiliation with the Medical College of Georgia.

Building upon experiences of the previous training project, including three existing health systems courses and a considerable number of health systems master's theses and doctoral dissertations, the HS faculty designed a set of health systems graduate courses and a graduate curriculum that would lead to the degree, Master of Science in Health Systems (MSHS). The new master's program was approved by the Institute Graduate Council and the Academic Senate in the Fall of 1974 and was officially authorized by the Regents of the University System of Georgia in March 1975. The first class of thirteen graduate students was admitted during the Spring and Summer and began the MSHS program of study in the Fall Quarter 1975.

The development of this innovative educational program, in pursuit of training project objectives, was facilitated by a National Advisory Committee which consisted of recognized authorities and leaders in health related systems education, professional practice, and health care administration. The Committee was charged with the duties of advising on Program plans, reviewing progress, and evaluating results. Committee business was transacted through the mail, by telephone contacts, and during annual meetings on the Georgia Tech campus in Atlanta.

During the eighteen academic quarters from Winter 1973 through Spring 1977, a total of 267 persons entered the Program in Health Systems as HS majors (222 undergraduates and 45 graduate students). Forty-five of these transferred out, 35 became inactive for various reasons, and 60 graduated. The HS student body steadily increased from 32 in 1973, to 62 in 1974, 112 in 1975, and 142 in 1976, 37 percent of whom

were female and seven percent "minority." Based upon enrollment in the Spring Quarter 1977 and new admissions through June 1977, it is estimated that the HS student body will total 150 majors in the Fall Quarter 1977.

As of June 1977, a total of 60 degrees (47 B.S. and 13 MSHS) had been awarded, and most of these graduates received more than one bona fide offer of employment. Thirty-seven of these were placed in technical staff positions in health care institutions, hospital associations, consulting firms, and government agencies; twelve went on to graduate schools, including four to medical schools and one to a physician's assistant program; and eleven were considering offers. The demand for qualified health systems practitioners continues to increase, and job opportunities are excellent.

During this same 18-quarter period, the faculty designed 39 new courses and offered 185 sections of 35 courses for 1,976 students from 23 curricula, for totals of 5,730 student-hours of instruction and 5,797 quarter-hours of academic credit. A total of 63 field training projects under faculty supervision were conducted by students at 40 field training sites in Atlanta and Augusta, in a number of other Georgia localities, and in several other states.

The educational program developed through this training project provides a broad overview of the health field and its problems, as well as an in-depth insight into feasible means of improving the health care system and its components. The program attracts bright young persons, educates them, and trains them in the methods and techniques of systems science and management engineering. It assists the student in applying such scientific methods to health care management problems, encourages individual initiative and ingenuity, and provides real-world learning experiences through field training. And, it reinforces such learning through recitations, oral and written reports, seminars, case studies, and discussions. Graduates of the Program in Health Systems are prepared to analyze, plan, design, and improve management systems of health care delivery and to play a useful role in improving the nation's health care system.

Evaluations of the training project were conducted throughout the project period, both formally and informally. A written critique, conducted at the end of each course offering, provided input from

individual students on course content, quality of study materials and assignments, and effectiveness of the instructor. A formal survey of alumni and their employers, conducted during 1976-77, gave some insight into the applicability of the curricula to actual job demands and expectations. In addition, students were invited to discuss the academic program on an informal basis with members of the National Advisory Committee at their meetings and were encouraged to discuss the academic program freely with faculty advisors. As a result of suggestions gained through the various evaluation channels, the curricula and courses were refined, modified, and strengthened on a continuing basis.

Major accomplishments during this five-year training project included introduction of the B.S. Curriculum in Health Systems, with health planning and premedical options; the MSHS Curriculum, with options in hospital management engineering and health systems planning; integrated sets of new undergraduate and graduate courses in various stages of development; a series of health systems course offerings and project opportunities for students majoring in other scientific fields; the creation, development, and distribution of a vast amount of teaching-learning material, some audiovisual aids, and the beginnings of several new textbooks; and the acquisition and development of a competent faculty. Perhaps the most significant contribution of the Program supported by this training grant has been its unparalleled record of producing skilled manpower needed for improving America's health care industry.

The ongoing development of health planning options at the bachelor's and master's levels, being supported by a separate training grant, gives an added dimension to the Health Systems academic program. The complexities of the health field, the manifest need for scientific approaches to chronic health care delivery problems, and the recently adopted public policy calling for rational health planning seem to make the addition of health systems planning skills particularly applicable and timely.

The Health Systems program at Georgia Tech was given significant recognition when it was accorded school status by the Regents of the University System of Georgia, effective 1 July 1977. Additional recognition has come from institutional memberships in the Georgia Hospital Association, the American Hospital Association, the American Society of

Allied Health Professions, and the American Health Planning Association. Unofficial recognition has come from the Committee on Academic Programs of the Health Services Division, American Institute of Industrial Engineers, and from the Academic Committee of the Hospital Management Systems Society, American Hospital Association. The School of Health Systems is presently in the process of applying for accreditation from the Accrediting Commission of Graduate Education for Health Services Administration and from the Engineers' Council for Professional Development, and is applying for institutional membership with the Association of University Programs in Health Administration.

The new School of Health Systems has a bright future. Having fulfilled the original objectives of the present training project, the faculty and staff of the School look forward to further growth and development and to new opportunities to be of service. My colleagues join me in expressing our appreciation to the Division of Associated Health Professions, Bureau of Health Manpower, whose vision, confidence, and support made this unique national resource a reality.

Harold E. Smalley, Ph.D.
Program Director

A handwritten signature in black ink, appearing to be 'H. E. Smalley', written over a horizontal line.

TABLE OF CONTENTS

	Page
SUMMARY OF FINAL REPORT	ii
LIST OF TABLES	ix
INTRODUCTION	1
Project Objectives	1
Grant Number and Title	2
Name of Grantee Institution	2
Name of Program Director	2
Period Covered by Report	2
Date of Preparation of Report	2
STAFFING	3
Project Staff	3
Guest Speakers and Consultants	7
TRAINING ACTIVITIES	8
Project Duration	8
Project Tasks	9
Course Development	10
Undergraduate Program Development	11
Graduate Program Development	17
Program Publicity	20
Statistical Data Summary	22
Cooperative Arrangements	27
Auxiliary Resources	31
EVALUATION ACTIVITIES	37
Internal Evaluation	37
External Evaluation	40
THE ALUMNI AND EMPLOYER QUESTIONNAIRES	43
Development of the Questionnaires	43
Distribution of the Questionnaires	45
Compilation of Data	47
Analysis of Data	49
Discussion of Results	49

TABLE OF CONTENTS--*Continued*

	Page
CONCLUDING EVALUATIVE REMARKS	81
APPENDICES	84
1. Resumes of New Staff Members	84
2. Guest Lecturers and Speakers (1976-77)	91
3. National Advisory Committee for the Program in Health Systems (1976-77)	96
4. Project Tasks and Results	97
5. Course Documentations for Selected Health Systems Courses	105
6. B.S. Curriculum Options (Curricula I, II, and III)	125
7. Field Training Sites and Projects	129
8. MSHS Degree Requirements	138
9. Publicity Materials	139
10. Alumni Placement	164
11. The Price Gilbert Memorial Library	172
12. Health Systems Reference Room	174
13. Office of Computing Services	175
14. Textbooks for Health Systems Courses	181
15. Evaluation Questionnaire for Instructors	184
16. National Advisory Committee Meeting Agenda (7-8 March 1977)	186
17. Alumni and Employer Questionnaires	188
DESCRIPTION OF EXHIBITS	217

LIST OF TABLES

Table	Page
1. Project Staffing Summary	4
2. Staffing Assignments for Year 04 (7/1/76-6/30/77)	5
3. Activities/Objectives Matrix	6
4. Health Systems Course Inventory	12
5. Enrollment and Hours of Training	23
6. Program Course Enrollment Summary	25
7. Categories of Selected Questionnaire Items	46
8. Questionnaires Distributed and Returned	48
9. Questionnaires Returned: With and Without Follow-Up	48
10. Status of Group A Respondents	51
11. Graduation Dates of Alumni Respondents	51
12. Group A Salary Levels	52
13. Group A: Response Distribution for Individual Items	53
14. Group A: Comparison of Preparation and Utility Mean Scores for Subject Areas, Techniques, and Managerial Problems	57
15. Group A: Comparison of Selected Categorical Variables	61
16. Group A: Comparison of Categorical Variables by Grade Point Average	62
17. Group A: Comparison of Categorical Variables by Salary Level	63
18. Group B: Response Distribution for Individual Items	65
19. Group B: Comparison of Preparation and Utility Mean Scores for Subject Areas and Managerial Problems	67
20. Group B: Comparison of Selected Categorical Variables	69
21. Status of Group C Respondents	69
22. Group C: Response Distribution for Individual Items	71
23. Comparison of Mean Scores for Categorical Variables	74

Table	Page
24. Inter-Group Comparisons of Preparation Responses to Curricula-Related Items	75
25. Comparison of Group A and Group B Utility Responses to Curricula-Related Items	78
26. Comparison of Group A and Group B Responses to Selected JF and GIMP Items	80

INTRODUCTION

This is the fourth and final progress report for the five-year, allied health professions special training project, "Curricula in Health Systems," supported by National Priority Grant AH 00242 from the Division of Associated Health Professions of the Bureau of Health Manpower, Department of Health, Education, and Welfare.

The report covers the project period 1 July 1972 through 30 June 1977, and provides a general description of the development and expansion of the Program in Health Systems at the Georgia Institute of Technology. A more detailed description of previously unpublished, final year's activities is also included.

Activities pursued under this training project have included the planning, establishment, and development of undergraduate and graduate health systems curricula; and the offering of health systems elective options for other engineering, architecture, science, and management students.

Project Objectives

The general objective of the project was to establish a viable, academically sound, socially relevant, educational program which would prepare students for professional careers concerned with the analysis, design, and improvement of operational and managerial systems of health care delivery in hospitals and in other health service organizations, as a means of improving the health care delivery system. This general objective has been sought by the Health Systems Research Center (HSRC) through the medium of the following specific objectives:

1. Establish an educational program at Georgia Tech for training students in the knowledge and skills necessary to analyze, design, and improve the systems for delivering health care, enabling the students, upon graduation, to perform as competent health systems practitioners.
2. Design curricula appropriate to the new educational program for training health systems analysts at the bachelor's and master's levels.
3. Develop educational materials and methods of instruction suitable for imparting the desired technical knowledge and analytical skills to student health systems analysts at Georgia Tech, and, subsequently, at other colleges and universities.

4. Attract potential students to this new and unique educational program, educate and train them, and assist them, upon graduation, in being placed in systems analysis positions in hospitals and in other health service organizations.
5. Disseminate information on experiences gained in the developmental project, and distribute educational materials to other health systems centers and other academic institutions that are interested in establishing similar training programs.

The remainder of the report describes various activities related to the pursuit of these objectives, and is essentially presented in the format requested by the sponsoring agency. Information in addition to that requested is included as appropriate.

Grant Number and Title

5 D12 AH 00242

"Curricula in Health Systems"

Name of Grantee Institution

Georgia Institute of Technology

Atlanta, Georgia 30332

Name of Program Director

Harold E. Smalley, Ph.D.

Regents' Professor

Period Covered by Report

1 July 1972 through 30 June 1977

Date of Preparation of Report

September 1977

STAFFING

This section provides an overall view of project staffing for the entire project period, including Health Systems faculty and staff, consultants, and guest speakers.

Project Staff

Included in Table 1 are the Health Systems (HS) personnel (excluding student assistants) who participated in the project. The table indicates the percentage of involvement for each person for Years 01 through 04.* As shown, a total of 43 staff and faculty members have had varying degrees of involvement in the project since its initiation in January 1973. All project staff positions have been filled. (Resumes for project staff not previously forwarded are in Appendix 1.) No particularly significant staffing problems were encountered at any time during the project, although faculty recruiting efforts were perhaps more difficult and time consuming than anticipated. This difficulty was partially due to the type of specialization and unique training desired for participation in the HS Program. However, recruiting efforts were fruitful and a balanced faculty has resulted. As the size of the student body increases, additional faculty and staff will be added as appropriate.

Persons involved in the project during Year 04 are listed in Table 2. This table indicates the duration and the percentage of involvement of each staff member assigned to the training project for the 04 Year. The percentage of involvement is broken down into the following seven activity or "Program Contribution" categories:

- A. Teaching--Those activities involving direct student contact during the regularly scheduled lecture-recitation periods, labs, field training, seminars, and other teaching-learning experiences.
- B. Course Development--Those activities occurring before a course is offered and consisting of preliminary planning, course numbering and titling, prerequisites, course description, texts and references, course purposes and objectives, scope and limitations, approach and method of instruction, and tentative course outline; and those activities after a course is offered that further develop

*The calendar period corresponding to Year 01 is 1/1/73-6/30/74; to Year 02, 7/1/74-6/30/75; Year 03, 7/1/75-6/30/76; and Year 04, 7/1/76-6/30/77.

Table 1
Project Staffing Summary*

Name	Position**	Percent Effort***			
		Year 01 1/73-6/74	Year 02 7/74-6/75	Year 03 7/75-6/76	Year 04 7/76-6/77
Harold E. Smalley	Regents' Professor	30%	30%	40%	40%
A. D. J. Emerzian	Professor	22%	33%		
A. O. Esogbue	Professor	7%	2%	20%	8%
John R. Watt	Professor	85%	50%		
Richard M. Bramblett	Associate Professor	8%	5%	10%	5%
Willard R. Fey	Associate Professor		6%		
James B. Mathews	Associate Professor	8%	5%	10%	5%
Lester A. Neidell	Associate Professor		12%	23%	
John W. Coyle	Assistant Professor	13%			
Bonnie J. Kay	Assistant Professor			75%	50%
Michael S. Leonard	Assistant Professor	44%	100%		
Justin A. Myrick	Assistant Professor		56%	50%	30%
James F. Smith	Assistant Professor	13%			
Howard E. Fagin	Lecturer	21%	50%	40%	30%
T. Joel Hall	Sr. Research Engr.		6%		
Julian V. Pittman, Jr.	Research Scientist			25%	40%
Edwin M. Sheats	Research Scientist	17%			
Donald R. Wallace	Research Scientist			8%	
David L. Whelan	Research Scientist	6%			
Clifford C. Fuller	Asst. Research Sci.		30%		
Nelson F. Sayford	Asst. Research Engr.	75%	85%	50%	30%
Charles Y. Thomason, III	Asst. Research Engr.			38%	40%
Lawrence S. Aft	Research Associate	23%	53%		
Ann A. Bailey	Research Associate	31%	75%	85%	55%
Clifford S. Goodman	Research Associate				10%
Joseph H. McNinch	Staff Consultant	5%	5%		
Edward A. French	Adm. Specialist	24%	30%	40%	30%
J. Norman Berry	Adjunct Assoc. Prof.	5%	5%	5%	5%
Raphael B. Levine	Adjunct Assoc. Prof.	5%	5%	5%	5%
F. Levering Neely	Adjunct Assoc. Prof.	5%	5%	5%	5%
Iris M. Mitchell	Research Technician		25%		15%
Lynn C. Ohlinger	Grad. Program Sec.			20%	30%
Eve M. Carroll	Education Secretary	20%			
Carol G. Gordy	Education Secretary	22%	100%	13%	
June W. Grisham	Education Secretary			47%	
Joanne Hartman	Education Secretary			13%	5%
Mary Tarver	Education Secretary	11%			
Joan S. Taylor	Education Secretary				30%
Katrina Cowan	Ref. Room Librarian	8%			
Eleanor McLaughlin	Ref. Room Librarian	17%			
Nancy Fraser	Secretary		33%		
Cynthia Henshaw	Secretary			12%	
Phillip Meyer	Project Assistant	13%	20%		

*Excludes Graduate Research and other student assistants.

**As of this report or the last period of project involvement.

***Figures may vary slightly from those previously reported due to the restructured yearly time frames.

Table 2
Staffing Assignments for Year 04
(7/1/76-6/30/77)

Name, HSRC Title	Number Months	Effort on Training Project*	Program Contribution**						
			A	B	C	D	E	F	G
Harold E. Smalley, Regents' Professor	12	40%	25	10	5	10	30	10	10
Augustine O. Esogbue, Professor	9	10%	80	10	10				
Richard M. Bramblett, Assoc. Prof.	12	5%					80	10	10
James B. Mathews, Assoc. Prof.	12	5%					80	10	10
Bonnie J. Kay, Assistant Professor	12	50%	65	10	10	10		5	
Justin A. Myrick, Assistant Professor	12	30%	65	10	10	10		5	
Howard E. Fagin, Lecturer	12	30%	80	10	10				
Julian V. Pittman, Jr., Res. Scientist	12	40%	40	10	5	5			40
Nelson F. Sayford, Asst. Res. Engr.	12	30%	10	5	25	25		10	25
Charles Y. Thomason, Asst. Res. Engr.	12	40%	65	15	15			5	
Clifford S. Goodman, Res. Associate	10	10%	15	35	30			20	
Ann A. Bailey, Research Associate	12	55%		30	25			30	15
Edward A. French, Adm. Specialist	12	30%					80	20	
J. Norman Berry, Adj. Assoc. Prof.	12	5%	100						
Raphael B. Levine, Adj. Assoc. Prof.	12	5%	100						
F. Levering Neely, Adj. Assoc. Prof.	12	5%	100						
Iris M. Mitchell, Research Technician	5	30%			40			20	40
Lynn C. Ohlinger, Sec. for Grad. Pgm.	12	30%			20	30	25	25	
Joan S. Taylor, Secretary	6	60%				20	60	10	10
Additional Secretarial Support	6	20%					90	10	
Michael V. Clark, Grad. Res. Asst.	6	30%							100
Nathan S. Kaufman, Grad. Res. Asst.	6	30%							100
Robert B. Kowalski, Grad. Res. Asst.	3	25%	50		50				
Leigh Gribble, Student Assistant	9	10%					50	50	

*Percentage of actual full-time equivalent involvement during months spent on training project.

**Percentage of time spent on training project in each program contribution category; sum of these percentages equals 100% regardless of percentage

"Effort on Training Project." Categories:

- A. Teaching
- B. Course Development
- C. Educational Materials
- D. Academic Counseling
- E. Administration
- F. Promotion and Publicity
- G. Project Evaluation

the course, based upon teaching experience, documentation, and refinements.

- C. Educational Materials--Those activities occurring in preliminary planning of a course and in subsequent refinements to the course that consist of the composition of teaching-learning materials, text manuscripts, handouts, lab work and homework problems, collections of reprints, development of quizzes, and other materials needed for a fully developed course.
- D. Academic Counseling--Those student-related activities that assist the student with his career plans, his course selections, his overall academic goal setting, his professional and technical preparation, his academic problems, and his placement in a health systems position upon graduation.
- E. Administration--Logistical and support services required in managing the academic program and in pursuing the training project.
- F. Promotion and Publicity--Activities associated with the generation of ideas, the planning of campaigns, the preparation and distribution of materials, and the handling of relations with prospective and incumbent students, educators, health field officials, and other special persons, in relation to student recruiting, program welfare, and graduate placement.
- G. Project Evaluation--The development of a design for assessing the degree of achievement of project objectives, including criteria, methods of measurement and of data collection, analyses, the planning of annual and final evaluations, the planning of annual and final reports, and the dissemination of project results; and the performance of activities in that design.

The activities/objectives matrix shown in Table 3 relates these seven areas of program contribution to the five objectives presented in the original project proposal.

Table 3
Activities/Objectives Matrix

Project Activities Contribution Categories	Project Objectives*				
	1	2	3	4	5
A. Teaching	X				
B. Course Development		X			X
C. Educational Materials			X		
D. Counseling				X	
E. Administration	X	X	X	X	X
F. Publicity				X	X
G. Evaluation	X	X	X		X

- *1--Establish a health systems educational program at Georgia Tech.
- 2--Design curricula appropriate to the new educational program.
- 3--Develop educational materials and methods of instruction.
- 4--Attract potential students.
- 5--Disseminate information on the program.

Guest Speakers and Consultants

Guest lecturers have been used in various HS courses throughout the project, including the popular seminar courses (HS 4692-3 and HS 8092-3). In all, 117 guest presentations have been made in HS courses, including 72 presentations by individuals from external organizations and institutions; 11 by HS adjunct faculty; 17 by HS faculty and staff; and 17 by HS students. (A list of guest lecturers and speakers for Year 04 is shown in Appendix 2.)

Consultation has been provided to project staff primarily by the Program's 13-member National Advisory Committee (NAC), consisting of prominent health systems educators, administrators, and practitioners. A list of NAC members is shown in Appendix 3. (A similar NAC will remain operative for the supplemental training project, "Health Systems Planning Option," supported by the Bureau of Health Manpower.)

TRAINING ACTIVITIES

All of the major activities proposed in the original grant application have been completed, with the results of project activities generally exceeding initial expectations and estimates. Project endeavors have recently culminated in the establishment of the School of Health Systems as an academic unit of the College of Engineering. Approval by the Board of Regents of the University System of Georgia of this new School is significant evidence of the success of this training project, and the academic program is continuing to grow, both as an extension of this project and as part of a supplemental training project begun in July 1976.*

Both an undergraduate curriculum and a graduate curriculum have been developed as part of the Program's activities. The undergraduate curriculum is composed of three options: health systems analysis, health systems planning, and premedical. The graduate program is composed of two options: hospital management engineering and health systems planning.

As of June 1977, a total of 39 new HS courses had been designed and implemented in these curricula since the start of the project. Also as of June, 47 Bachelor of Science (B.S.) and 13 Master of Science in Health Systems (MSHS) degrees had been awarded, with virtually all of these graduates being placed in health related positions or in graduate study. The HS student body has increased steadily from 32 in 1973, to 62 in 1974, 112 in 1975, 142 in 1976, and it is estimated that 150 students will be enrolled as HS majors in the Fall Quarter 1977.

The following sections describe specific project activities leading to these and other accomplishments. Included are descriptions of the course development process and individual HS courses, quantitative project information, and resources that have been utilized in conducting the project.

Project Duration

The training project was originally scheduled to be initiated 1 July 1972, and all project tasks were keyed to that date. However,

*This supplemental project is entitled "Health Systems Planning Option" and is supported by the Bureau of Health Manpower as an allied health professions special training project.

because of the delays in obtaining Curriculum Committee and Academic Senate approvals of the new courses and curricula, a six-month's delay in activating the training grant was sought by HSRC and approved by the sponsoring agency. Accordingly, the training project was officially initiated 1 January 1973.

After receiving notice in February 1973 that this training grant was to be phased out, with no funding in continuation years, HSRC was subsequently notified in April 1973 that the project had been designated as one with national significance, that the first budget period had been increased from 12 to 18 months (with a proportional increase in funds), and that 3 continuation years of funding were to be recommended. Hence, the amended grant award was for a total of four and one-half years. This period was preceded by six months of preliminary project activities, resulting in an overall project period of five years, as follows:

	<u>Project Period</u>	<u>Duration</u>
Preliminary Activities	7/1/72-12/31/72	6 months
Year 01	1/1/73-6/30/74	18 months
Year 02	7/1/74-6/30/75	12 months
Year 03	7/1/75-6/30/76	12 months
Year 04	<u>7/1/76-6/30/77</u>	<u>12 months</u>
Total	7/1/72-6/30/77	5 years*

Project Tasks

As specified in the original grant application, project activities were structured as a series of tasks to be accomplished over certain calendar periods. These tasks were primarily concerned with the development of HS curricula; the design of HS courses and academic materials; publicity of the Program and recruitment of students; direction and coordination of Program activities; and evaluation of the project. These and other project tasks were pursued as stated in the original grant application or as modified in subsequent Progress Reports. Since the results of the tasks for Year 01 through Year 03 were presented in previous

*The grant period was recently extended through 30 September 1977 to allow for more thorough reporting of project data. This extension made the total funded project period four and three-quarter years.

Progress Reports, they are not repeated here. However, project tasks, and the results or status of these tasks, are listed in Appendix 4. A review of Appendix 4 provides an overall view of the task-related achievements of the five year project period. The following sections provide a more detailed look at some of the activities conducted throughout the duration of the project, emphasizing those pursued during Year 04.

Course Development

Throughout the project, the development of new Health Systems courses has followed a systematic procedure consisting of the following steps:

1. Initial Description--Course identified as to subject matter area, scope, and level; numbered and titled; paragraph description.
2. Preliminary Plans--Initial description refined; purposes and objectives of course; approach, method of instruction; and special provisions; course outline; texts, references, and collateral readings; approvals by faculty and director.
3. Initial Course Design--Specific preparation for teaching the course; schedule the course outline; prepare handouts, homework, quizzes, and other teaching-learning materials; arrange for term projects, lab work, site visits, etc.; plan for student critique and for faculty review; document the course design.
4. Initial Course Offering--Carry out initial course design in teaching the course within the constraints of the approved preliminary plans; keep a record of all course activities, teaching-learning materials, and other course materials; arrange for a study of student critiques and for faculty review; document initial offering in the historical file.
5. Revised Course Design--Recommend improvements in the course; revise preliminary plans and initial course design as desirable; obtain faculty and director approvals; document and file the resulting course design.
6. Subsequent Course Offerings--Carry out approved course design in teaching the course for the second (or subsequent) time, within the constraints of the approved course plan and design; keep course offering records; student critiques and faculty review; recommend improvements; file documentation.
7. Course Development--General review of the course by the faculty; consideration of changes in course plan and design; file documentation.

Steps 1 through 3 are initiated by Program faculty based upon perceived curricula needs. Steps 4 through 7 are undertaken once the Insti-

tute's Curriculum Committee has approved the course as designed in the initial steps. Table 4 contains a complete listing of all courses conceived and designed by Program faculty, and approved to be offered as a result of this grant. It should be noted that HS 4021, 6332, 6340, and 6341 were developed and/or updated in conjunction with the new supplemental training grant, "Health Systems Planning Option."

Each course designed is documented in a "course documentation" which contains the following information:

1. Course description (as it appears in General Catalog)
2. Textbook(s) required
3. Purposes and objectives of the course
4. Scope and limitations of the course
5. Approach and method of instruction
6. Bases for grading
7. Course outline (updated as changes occur)

A selected set of course documentations is contained in Appendix 5.

Undergraduate Program Development

The undergraduate HS curriculum offers three different but inherently similar options for HS majors, and each leads to the Bachelor of Science degree. For administrative purposes, these three options are referred to in the Georgia Tech General Catalog as Curricula I, II, and III.

Curriculum I is the basic health systems management engineering option and is intended for those students who wish to keep their choices open for a variety of positions in the field of health systems. This curriculum provides considerable flexibility so that students from various fields can transfer into it without losing credit already earned, and it contains sufficient electives to accommodate various specialty interests.

Curriculum II is the health planning option, designed to broaden the preparation of the health systems specialist for professional practice in the subspecialty of health systems planning. Such a planning function covers manpower, facilities, logistics, organization, finances, and other systems components, and it includes consideration of medical, behavioral, socio-economic, demographic ethnic, political, legal, and other relevant factors. Whereas health

Table 4
Health Systems Course Inventory

<u>Course No.</u>	<u>Course Title</u>	<u>Lecture Hours</u>	<u>Laboratory Hours</u>	<u>Credit Hours</u>
2011	Introduction to the Health Field	3	0	3
3011	Hospital Functions and Problems	3	0	3
3021	Nonhospital Components of the Health Care System	3	0	3
3111	Methods Improvement in the Health Services	3	0	3
3121	Work Measurement in the Health Services	3	0	3
3131	Health Systems, Processes and Facilities	3	0	3
3211	Data Processing in the Health Services	3	0	3
3332	Health Care Cost Analysis	3	0	3
3341	Health Systems Planning	3	0	3
3351	Health Systems Projects and Reports	3	0	3
3780	Introduction to Urban Engineering	3	0	3
3971,2,3	Special Problems	variable credit		
4021	Community Health Problems and Planning	3	0	3
4131	Processes and Facilities	3	0	3
4141	Health Facility Planning	3	0	3
4351	Case Studies	3	0	3
4570	Field Training Proposal	0	3	1
4571,2,3	Senior Externship (replaced 4471,2,3)	0,0,0	12,12,12	4,4,4
4581	Health Systems Externship	0	36	12

Table 4--Continued

<u>Course No.</u>	<u>Course Title</u>	<u>Lecture Hours</u>	<u>Laboratory Hours</u>	<u>Credit Hours</u>
4691	Health Systems Seminar	2	0	2
4692,3	Seminars	1,1	0,0	1,1
4765	Hospital Management Systems	3	0	3
4861,2,3	Health Systems Topics	3,3,3	0,0,0	3,3,3
6001	Introduction to Health Systems	3	0	3
6231	Health Systems Project Management	3	0	3
6331	Health Systems Analysis I	3	0	3
6332	Health Systems Analysis II	3	0	3
6333	Health Systems Analysis III	3	0	3
6340	Health Planning Techniques	3	0	3
6341	Health Systems Planning	3	0	3
6351	Research and Evaluation Methods	3	0	3
6570	Field Training Proposal	0	3	1
6571,2,3	Graduate Field Training	0,0,0	3,6,9	1,2,3
6765	Case Studies in Hospital Management Systems	3	0	3
7000	Master's Thesis		variable credit	
7765	Projects in Hospital Management Systems	1	6	3
8092,3	Graduate Seminars	1,1	0,0	1,1
8161,2,3	Topics in Health Systems	3,3,3	0,0,0	3,3,3
8971,2,3	Special Problems		variable credit	

systems analysts normally are employed or are retained as consultants by individual hospitals or other health care institutions, health systems planners typically serve in government agencies, consulting firms or other organizations concerned with multi-institutional and community-wide systems of health care delivery.

Curriculum III is the premedical option designed to satisfy the normal course preparation required by most medical and dental schools while providing the systems orientation now being favored by leading medical educators. Nationally, about two of every three medical school applicants are rejected, and the proportion of professed premeds still in undergraduate school is even higher. A significant advantage of this premedical option is that, if the student decides not to apply to medical or dental school or applies and is not admitted, he or she will be prepared to pursue a professional career in health systems--a field in which the increasing demand exceeds the limited supply of qualified practitioners.

Initial development of the undergraduate program began during the preparation of the original grant application. Upon approval and funding of the training project, a more defined and detailed curriculum began to emerge. Within the constraints of the College of Engineering for the Bachelor of Science degree, the purpose of the undergraduate curriculum development was to produce an academically sound and functionally practical set of courses which would, within the normal 12 academic quarter (4-year) span, provide the student with the tools to function successfully and productively as a health systems professional. Thus, a major thrust of curriculum development involved the effective integration of existing Institute courses and new Health Systems courses into the best possible curriculum.

In Winter Quarter 1973, the first version of the B.S. curriculum of the Program in Health Systems was implemented. During the first and all successive years of curriculum implementation, faculty, student, and NAC suggestions for improvement have been continually collected, leading to curriculum refinements in each year of the training project. Detailed explanations of yearly curriculum changes have appeared in previous Progress Reports. In all cases, curriculum changes were carefully considered by faculty, the NAC, and the Institute's Curriculum Committee.

Consistent with similar efforts conducted throughout the duration of the project, certain improvements in the undergraduate curriculum were made during Year 04. These improvements reflect changes in course content, faculty, student and health systems practitioners' input, faculty availability, and institutional constraints.

A particularly noteworthy improvement during Year 04 was the addition of the new course, HS 4021, "Community Health Problems and Planning" to the undergraduate program. HS 4021 was introduced into the undergraduate program for the first time in Fall Quarter 1976. The purpose of including HS 4021 was to give students an understanding of the health systems planning problems of urban and rural communities, and to introduce students to the techniques, methodologies, and decision-making processes essential to effective community health planning. One major activity of the course as taught for the first time in Fall Quarter 1976 was the development of plans for a community health center by class members. These plans, completed for the Techwood community adjacent to the Georgia Tech campus, addressed such problems as the number and mix of staff and services to be provided, the location, the hours of operation, the methods of financing, space allocation, community description, and community health needs assessment. The plans were designed in such a manner to be readily usable by potential decision-makers. Appendix 5 contains a complete course documentation for HS 4021.

The following changes, approved by the Institute's Curriculum Committee during Year 04, apply to Curriculum I (basic health systems). These changes also apply to Curricula II (planning option) and III (premedical option), except for those blanket substitutions and mandatory electives unique to those options, which are subsequently described.

1. Add "Elective: PE, 3 hours" and drop PE 1040 in order to overcome procedural problems in conforming to Institute-wide PE requirements. PE 1040 will become a recommended elective.
2. Remove the prohibition against the use of HS 3111 by HS majors, add HS 3111 and 4141, and drop ISyE 3010 and 3115. Topical coverage of HS techniques is being repartitioned across HS 3111, 3121, 4131, and 4141, and such coverage (in a health context) includes all relevant topics of ISyE 3010 and 3115.

3. Add ISyE 3027-8 as an alternative to M.Sci. 3110-1 and Math 3710. This will facilitate course scheduling since ISyE 3027 and 3028 are offered every quarter.
4. Add ISyE 3131 and 4101, and drop Mgt. 3050, M.Sci. 3400, and M.Sci. 3403. ISyE 4101 is more relevant to HS intra-institutional analysis than is M.Sci. 3403, and it is offered much more frequently. ISyE 3131 is a prerequisite to ISyE 4101. Mgt. 3050 is being dropped because the course emphasis has changed significantly and no longer serves HS needs.
5. Add "Elective: Social Science, 3 hours" and drop "Elective: Psy or Soc, 3 hours" in order to provide a reminder of the 18-hour social science requirement and to permit the use of HS-relevant political science courses.
6. Add 2 hours of free electives in order to retain the 196-hour degree requirement.

Summary of changes in Curriculum I:

<u>Add in 1977-78 Catalog</u>		<u>Drop from 1976-77 Catalog</u>	
Elec: Physical Education	3 hrs.	PE 1040	3 hrs.
HS 3111 and 4141	6 hrs.	ISyE 3010 and 3115	6 hrs.
Elec: Statistics (add ISyE 3027-8 as alternative, no change in hours)			
ISyE 3131 and 4101	7 hrs.	M.Sci. 3400, 3403, Mgt. 3050	9 hrs.
Elec: Soc Sci	3 hrs.	Elec: Psy or Soc	3 hrs.
Elec: Free	<u>2 hrs.</u>		
	21 hrs.		<u>21 hrs.</u>

In order to strengthen the "Management Engineering" sequence (previously HS 3121 and 4131), a reorganization of the course sequence HS 3111, 3121, 4131, and 4141 was undertaken and successfully completed. This restructured course sequence allows increased coverage of vital management engineering concepts and techniques to be given while minimizing duplication of course content. Tighter control over prerequisite preparation is also achieved, as material previously taught in two out-of-department courses preparatory to this "sequence" is now incorporated into HS 3111 and 3121. Among the curriculum changes made, this is the most significant. The current version of Curriculum I is shown in Appendix 6.

Curriculum II (planning option) differs from Curriculum I by virtue of the following blanket substitutions and mandatory electives:

Blanket Substitutions

HS 3341 and 4692	4 hrs.	for	ISyE 4101	4 hrs.
M.Sci. 3400	3 hrs.	for	ISyE 3131	3 hrs.
	<u>7 hrs.</u>			<u>7 hrs.</u>

Mandatory Electives

Soc. 1376	3 hrs.	as	Elec: Psy or Soc	3 hrs.
Elec: Political Economics*	3 hrs.	as	Elec: Free	3 hrs.
Elec: Political Problems**	3 hrs.	as	Elec: Soc Sci	3 hrs.
CP 1100	3 hrs.	as	Elec: Environmntl	3 hrs.
HS 4021	3 hrs.	as	Elec: Free	3 hrs.
Elec: Planning***	6 hrs.	as	Elec: Technical	6 hrs.
Elec: Planning***	3 hrs.	as	Elec: Free	3 hrs.
	<u>24 hrs.</u>			<u>24 hrs.</u>

The resulting version of Curriculum II is shown in Appendix 6.

This curriculum is the first implemented version of the undergraduate planning option. This option was conceptualized as a result of this training project, and has been implemented in conjunction with the "Health Systems Planning Option" training grant.

Curriculum III (premedical option) differs from Curriculum I in that virtually all of the free and specified electives are utilized to fulfill premedical or predental course requirements. The current version of Curriculum III (shown in Appendix 6) differs from the previous year's version only to the extent of the changes in Curriculum I previously discussed.

Graduate Program Development

The MSHS curriculum is designed to provide educational background and field experience for two functionally different, although inherently similar, types of professional practitioners--health systems analysts and health systems planners. The analyst is primarily concerned with the analysis, design, and evaluation of institutional

*Econ 3501, 4330, 4331, or a substitute approved by the faculty.

**Pol 3217, 3220, 3221, 3250, or a substitute approved by the faculty.

***Technical courses that emphasize socio-economic systems analysis or evaluation, computer methods, health systems analysis or design, and other planning techniques; to be selected from among courses approved by the faculty.

health care delivery systems, while the major activities of the health systems planner involve the design, implementation, and evaluation of multi-organizational programs of health care delivery.

The core of courses in the MSHS curriculum includes a series of lecture, case study, and project-oriented courses, with specialty area electives and field training. The graduate student may enroll in either the thesis option or the project option, each normally requiring one calendar year of graduate study.

On 12 March 1975, approval was granted by the Regents of the University System of Georgia for the MSHS degree to be awarded. Thus, the graduate curriculum was officially launched and the first 13 students were admitted in the Fall Quarter of 1975. Since the development and implementation of the initial MSHS curriculum, a number of improvements have been made in the analysis and planning options, and in their common core of courses. During Year 04 the most significant of these improvements were made. Noteworthy among these was the addition of a new course, HS 6340, "Health Planning Techniques," to the curriculum. This course is briefly described below and is documented in more detail in Appendix 5.

HS 6340 was introduced into the graduate curriculum for the first time in Winter Quarter 1977, taught under the special topics number HS 8161 in accordance with Institute policy. Formal approval by the Georgia Tech Graduate Committee for HS 6340 was given on 1 March 1977. The purpose of including HS 6340 in the curriculum was to provide students with hands-on experience using selected methodologies and techniques employed by health planning practitioners. The course uses the systems planning paradigm (problem formulation, goal-objective-setting, evaluation, decision-making, implementation, re-examination) as a framework for discussing and experimenting with appropriate tools and techniques such as group processes, health status index synthesis, application of factor analysis to needs assessment, patient origin and accessibility analyses. A working knowledge of statistical methods and a general familiarity of the health care delivery system are course prerequisites.

HS 6332, "Health Systems Analysis," a core course for analysts as well as planners in the master's program, now contains new instruction in cost-benefit analysis. The addition in course

coverage comes in response to student feedback from the previous year's delivery of the course, and Program efforts to introduce applied techniques for evaluation and decision-making. Appendix 5 includes a complete revised course documentation of HS 6332.

HS 6341, "Health Systems Planning," has assumed a more advanced, applied course content. Because HS 6332 and HS 6340 (now a prerequisite for HS 6341) are structured to cover various planning techniques and methodologies in considerable depth which had previously been touched upon in HS 6341, students coming into HS 6341 will be better equipped to use planning tools in more applied contexts. New instruction in HS 6341 focuses on planning agency decision-making processes, and development of area-wide health plans and implementation processes. The course features analysis of the Health Systems Plan (HSP) of the North Central Georgia Health Systems Planning Agency (Atlanta) and development of an Annual Implementation Plan (AIP) by student groups. Appendix 5 includes a full course documentation of the revised HS 6341.

The HS 6340, HS 6341 sequence will provide students the opportunity to work with and understand the scope and limitations of a variety of planning tools, and then integrate these tools with an understanding of planning policy and agency responsibilities into workable, concise health plans and implementation strategies.

In order to maximize graduate student exposure to the enlightening and sobering realities of active health planning in the real world, and to take full advantage of the wealth of health planning sites available to the Program, graduate field training (HS 6571-2-3) has been expanded from 3 to 6 credit hours. The field training performance record of students (see Appendix 7), steady Program improvement, and increased needs of health planning agencies have created a situation where the number of students available for field training is inadequate to meet requests of local and state-wide planning agencies, health departments, and related institutions.

As a result of the increase in graduate field training to 6 credit hours, the introduction of HS 6340 into the master's curriculum as a required course, and the refinements in HS 6332 and HS 6341, the master's curriculum was significantly altered during Year 04. The core of courses was expanded, and modified sets of elective courses

were established for the analysis and planning options. "Health Systems Analysis I" (HS 6331), "Health Systems Planning" (HS 6341), and "Case Studies" (HS 6765) were added to the core of courses. Thus, while instruction in intra-institutional management engineering and industrial engineering/operations research case studies remains, the curriculum includes expanded field training and is considerably enriched with respect to health systems planning. In addition to core curriculum modifications, changes were made in prerequisite and requisite course requirements. The minimum of 50 hours required for the MSHS degree remained unchanged. The revised curriculum is shown in Appendix 8, and detailed descriptions of selected graduate HS courses are included in Appendix 5.

The development of new instruction will continue to be a major priority of the School of Health Systems. This is especially important in light of the rapidly emerging nature of the planning and analysis of health care delivery systems. Communication with health systems practitioners, including graduates of this School, gathering input and feedback from faculty and students, and remaining actively involved in the business of health systems planning and analysis will assist the School in best directing its efforts to maintain the most viable programs of study.

Program Publicity

As previously indicated, enrollment of HS majors and of majors in other disciplines in HS courses has generally exceeded original expectations. A comprehensive marketing strategy adopted at the beginning of and continued throughout the project is felt to have significantly influenced the number of students enrolled in the Program.

For undergraduate students, Program literature was directed, with appropriate cover letters, to high school counselors, dual-degree advisors, and selected lists of prospective students, including lists of minority students. Faculty representation at various on-campus functions for National Merit Scholars, MITE (Minority Introduction to Engineering) groups, Georgia Tech freshman orientation sessions, and at other off-campus activities for high school students presented numerous opportunities for personal

contact with prospective HS majors. A complete description of the marketing strategy was presented in the Progress Report for Year 01. Selected publicity materials used during Year 04 are contained in Appendix 9.

Upon the approval of the MSHS program in the Spring of 1975, a massive publicity campaign was hurriedly launched to recruit the initial class to begin in the Fall Quarter. Announcements of the MSHS program were sent to selected college deans, school directors, and department heads for posting; to various health and management oriented professional organizations; and to those on the HSRC mailing list--a list of health professionals, health systems practitioners, educators, government officials, editors, librarians, executive directors of professional organizations, and others. News releases announcing the MSHS program were sent to selected media and advertisements were placed in appropriate trade journals, college guides, and in Georgia Tech publications. Similar efforts have been continued to maintain the desired enrollment in the Program. Publicity materials regarding the master's program that were distributed during the 04 Year are also contained in Appendix 9.

In addition to the graduate and undergraduate program publicity materials, Appendix 9 also contains general publicity concerning activities of the academic and research programs which, it is felt, also played a role in the recognition and acceptance of the academic program. Health Systems seminars, open to the public and the general Georgia Tech community, also contributed indirectly to publicity efforts.

Other significant publicity efforts were directed toward the placement of Program graduates, as it was apparent that the graduates would need some assistance from the faculty and staff in obtaining employment. The Program was new and relatively unknown; the term "health systems" was subject to connotative interpretations and was therefore misunderstood by many; and potential employers were not "educated" to request HS majors in their contacts with the Georgia Tech Placement Center. Too, the Placement Center operation was geared to formal, prescheduled interview seasons for large corporations seeking to fill multiple openings rather than to the individual employer seeking one or two persons to fill immediate openings.

Consequently, a Health Systems Employment Opportunity Service was initiated to fill this vacuum. Regular staff and faculty members were assigned the graduate placement responsibilities. Through general Program publicity, personal contacts with members of professional organizations and health systems practitioners, and specific publicity aimed to inform employers of the availability of Health Systems graduates, adequate opportunities for employment were realized.

Statistical Data Summary

Since January 1973, 179 sections of 32 courses have been offered. These courses were taken by 1,900 students from virtually every curricula at Georgia Tech. This enrollment represents 5,520 hours of instruction which produced 5,566 quarter hours of academic credit. Specific enrollment data for Year 04 are shown in Table 5. (Enrollment data for previous years were presented in previous Progress Reports.)

In addition to these HS course offerings, four sections of health related Industrial and Systems Engineering courses were taught during 1973 by HS faculty to 51 students with an investment of 150 hours of instruction which produced 156 quarter hours of academic credit. During that same year, two sections of health related courses were taught by HS faculty at the Southern Technical Institute (a division of Georgia Tech) in Marietta, Georgia, to 25 students with an investment of 60 hours of instruction which produced 75 quarter hours of academic credit.

Thus, a grand total of 185 sections of health related coursework has been taught by Program faculty to 1,976 students with an investment of 5,730 hours of instruction and has produced 5,797 quarter hours of credit. A course by course tabulation of this total enrollment is shown in Table 6.

A total of 267 students have been (or are currently) enrolled as HS majors at some time during the grant period. Of these, 222 were bachelor's degree students and 45 were master's degree students. As a result of this grant, 47 B.S. and 13 MSHS degrees have been awarded. And there is no way to know how many additional health related careers have been launched as a result of non-majors taking

Table 5
Enrollment and Hours of Training

<u>Course</u>	<u>No. of Sections</u>	<u>No. Students Enrolled</u>	<u>Credit Hours</u>	<u>Hours of Instruction*</u>	<u>Quarter Hours of Credit Produced**</u>
<u>Summer 1976:</u>					
H.S. 2011	1	30	3	30	90
H.S. 3021	1	14	3	30	42
H.S. 4131	1	12	3	30	36
H.S. 4570	1	1	1	10	1
H.S. 4571	1	4	4	40	16
H.S. 4572	1	4	4	40	16
H.S. 4573	1	4	4	40	16
H.S. 4692	1	5	1	10	5
H.S. 6231	1	16	3	30	48
H.S. 6571	1	5	1	10	5
H.S. 6572	1	3	2	20	6
H.S. 6573	1	11	3	30	33
H.S. 8092	1	1	1	10	1
H.S. 8093	1	10	1	10	10
H.S. 8971	1	1	1	10	1
		<u>121</u>		<u>350</u>	<u>326</u>

Fall 1976:

H.S. 2011	1	36	3	30	108
H.S. 3011	1	29	3	30	87
H.S. 3121	1	10	3	30	30
H.S. 3211	1	13	3	30	39
H.S. 4021	1	16	3	30	48
H.S. 4570	1	11	1	10	11
H.S. 4571	1	3	4	40	12
H.S. 4572	1	2	4	40	8
H.S. 4573	1	2	4	40	8
H.S. 4765	1	17	3	30	51
H.S. 4861	1	2	3	30	6
H.S. 6001	1	22	3	30	66
H.S. 6351	1	13	3	30	39
H.S. 6570	1	3	1	10	3
H.S. 6571	1	1	1	10	1
H.S. 6572	1	4	2	20	8
H.S. 6573	1	1	3	30	3
H.S. 8971	1	1	1	10	1
H.S. 8972	1	1	2	20	2
H.S. 8973	1	1	3	30	3
		<u>188</u>		<u>530</u>	<u>534</u>

Table 5--Continued

<u>Course</u>	<u>No. of Sections</u>	<u>No. Students Enrolled</u>	<u>Credit Hours</u>	<u>Hours of Instruction*</u>	<u>Quarter Hours of Credit Produced**</u>
<u>Winter 1977:</u>					
H.S. 2011	1	16	3	30	48
H.S. 3011	1	24	3	30	72
H.S. 3021	1	35	3	30	105
H.S. 3351	1	20	3	30	60
H.S. 4131	1	9	3	30	27
H.S. 4141	1	16	3	30	48
H.S. 4570	1	3	1	10	3
H.S. 4571	1	10	4	40	40
H.S. 4572	1	9	4	40	36
H.S. 4573	1	8	4	40	32
H.S. 4693	1	12	1	10	12
H.S. 6331	1	11	3	30	33
H.S. 6570	1	7	1	10	7
H.S. 6571	1	3	1	10	3
H.S. 6572	1	3	2	20	6
H.S. 6573	1	1	3	30	3
H.S. 8092	1	17	1	10	17
H.S. 8161	1	11	3	30	33
		<u>215</u>		<u>460</u>	<u>585</u>

Spring 1977:

H.S. 2011	1	18	3	30	54
H.S. 3021	1	20	3	30	60
H.S. 3121	1	15	3	30	45
H.S. 3351	1	13	3	30	39
H.S. 4351	1	16	3	30	48
H.S. 4570	1	4	1	10	4
H.S. 4571	1	4	4	40	16
H.S. 4572	1	5	4	40	20
H.S. 4573	1	6	4	40	24
H.S. 6341	1	9	3	30	27
H.S. 6351	1	5	3	30	15
H.S. 6570	1	4	1	10	4
H.S. 6571	1	6	1	10	6
H.S. 6572	1	6	2	20	12
H.S. 6573	1	2	3	30	6
H.S. 6765	1	8	3	30	24
H.S. 8971	1	1	3	30	3
		<u>142</u>		<u>470</u>	<u>407</u>
Totals for Four Quarters		<u>666</u>		<u>1810</u>	<u>1852</u>

*"Hours of Instruction" is defined as the number of direct student contact hours per week times the number of weeks in a quarter (assumed to be 10).

**"Quarter Hours of Credit Produced" is defined as the credit hours assigned to a course times the number of students attending the course.

Table 6
Program Course Enrollment Summary
(Winter Quarter 1973 Through
Spring Quarter 1977)

Course No.	Course Title	(Rounded) Average Class Size	Sections Offered	Total Students Enrolled
<u>Health Systems (HS) Courses:</u>				
2011	Introduction to the Health Field	22	25	543
3011	Hospital Functions and Problems	21	11	226
3021	Nonhospital Components of the Health Care System	24	6	142
3121	Work Measurement in the Health Services	13	6	75
3131	Health Systems, Processes and Facilities	10	4	38
3211	Data Processing in the Health Services	9	7	63
3351	Health Systems Projects and Reports	15	6	90
3971,2,3	Special Problems	3	7	19
4021	Community Health Problems and Planning	16	1	16
4131	Processes and Facilities	7	3	22
4141	Health Facility Planning	16	3	48
4351	Case Studies	14	2	28
4570	Field Training Proposal	5	4	19
4571,2,3	Senior Externship (replaced 4471,2,3)	6	22	121
4581	Health Systems Externship	2	8	13

Table 6--Continued

Course No.	Course Title	(Rounded) Average Class Size	Sections Offered	Total Students Enrolled
4691	Health Systems Seminar	4	7	25
4692,3	Seminars	6	7	44
4765	Hospital Management Systems	9	4	35
4861,2,3	Health Systems Topics	8	3	25
6001	Introduction to Health Systems	20	2	40
6231	Health Systems Project Management	16	1	16
6331	Health Systems Analysis I	12	2	24
6332	Health Systems Analysis II	16	1	16
6341	Health Systems Planning	11	2	22
6351	Research and Evaluation Methods	11	3	33
6570	Field Training Proposal	5	3	14
6571,2,3	Graduate Field Training	4	12	46
6765	Case Studies in Hospital Management Systems	7	3	22
8092,3	Graduate Seminars	9	4	37
8161,2,3	Topics in Health Systems	10	2	19
8971,2,3	Special Problems	3	8	<u>20</u>
Total HS Enrollment				1900
<u>Industrial and Systems Engineering (ISyE) Courses:</u>				
4765	Industrial Engineering in Hospitals	16	3	48
6765	Analysis of Health Care Delivery Systems	3	1	3
Total ISyE Enrollment				<u>51</u>

Table 6--Continued

Course No.	Course Title	(Rounded) Average Class Size	Sections Offered	Total Students Enrolled
<u>Industrial Engineering Technology (IET, Southern Tech) Courses:</u>				
493	Special Topics	13	2	<u>25</u>
	Total IET Enrollment			25
	Grand Total Enrollment			<u>1976</u>

HS courses as electives. As of 30 June 1977, 37 of the 60 graduates were placed in technical staff positions in health care institutions, hospital associations, consulting firms, and government agencies; 4 were in medical school; 1 had been accepted in a physicians' assistant program; 7 were in graduate and postgraduate programs; and 11 were considering offers or employed in other fields. The status of Program graduates is shown in Appendix 10.

Cooperative Arrangements

One of the keys to the success of this project has been the Program's ability to develop mutually beneficial cooperative ties and collaborative arrangements with various other Georgia Tech resources and a broad range of academic institutions, health institutions, and related agencies. Many of these arrangements have been general and ongoing in nature, while others were established for specific, individual projects.

Throughout the duration of the training project, the Program has maintained cooperative relationships with those academic units at Georgia Tech providing out-of-department required courses for the undergraduate and graduate curricula. These curricula include appropriate coverage in chemistry, the humanities, industrial engineering, management science, mathematics, physical education, physics, psychology, and social sciences as administered by the appropriate Georgia Tech departments. In addition to required courses, many elective courses have been taken by HS majors in

academic units other than the Program in Health Systems, as previously indicated. The Program's continuing efforts to monitor course development and new offerings throughout the Institute have enabled students to take full advantage of the scope of applicable educational opportunities on the Tech campus.

The Program in Health Systems has continued its collaboration with 15 Georgia and 48 out-of-state colleges and universities as part of a dual liberal arts/science degree under the dual-degree program of these institutions and Georgia Tech. A bachelor's degree is awarded by both colleges upon the completion of the 5-year program (3 years at the first institution and 2 years at the second). One dual-degree major completed his degree requirements (for both Hartwick College in New York and Georgia Tech) in Fall Quarter 1975, and another student has been admitted to the School of Health Systems under the dual-degree program (also with Hartwick College) for Fall Quarter 1977.

The Program in Health Systems is affiliated with the Medical College of Georgia (MCG) and collaborates closely with the Institute of Health Administration and the School of Allied Health Sciences at Georgia State University. Affiliation with MCG has provided meaningful contact with medical professionals and emerging techniques of medical care. This affiliation has been enhanced by joint faculty appointments between MCG and the Program in Health Systems. A special interdepartmental program continues with the School of Industrial and Systems Engineering and the Medical College to offer master's and doctoral-level programs to research oriented students. This is a continuation of the training project, "Program in Hospital and Medical Systems," supported by the Bureau of Health Manpower, from 1 July 1967 through 30 June 1972. Since that time, five master's degrees and three doctoral degrees have been awarded under this interdepartmental program.

One special cooperative arrangement between the Program and Georgia State University was made for Winter Quarter 1977. Due to the unforeseen circumstances regarding the teaching of HS 6332, the Program and Georgia State University arranged for Jerry Caswell, Ph.D., of that University's School of Business Administration, to teach the course HS 6332 under the special Georgia State course number Insurance

(INS) 850 on the Georgia Tech campus. The course content of INS 850 was exactly that which is listed in the HS 6332 course documentation. Although no Georgia State students took INS 850, all students regularly scheduled to take HS 6332 took INS 850 under this special arrangement.

Early in the training project, work was conducted concerning the feasibility of developing health systems options for the Industrial Engineering Technology Department at the Southern Technical Institute, a division of Georgia Tech, whose purpose is the provision of training at the two-year associate level and the four-year baccalaureate level in engineering technology. An HSRC faculty member taught a course, IET 493, at Southern Tech during the Winter and Spring Quarters of 1973.

Through the research and community outreach activities of HSRC, and as an extension of the credit education activities of the Program in Health Systems, many hospitals, nursing homes, health planning agencies, consulting firms, and other health related groups have cooperated and assisted in carrying out efforts associated with the improvement of health services delivery, and with the training and education of health systems professionals.

Over the course of the training project, HSRC established numerous collaborative arrangements and contacts with Georgia and Alabama hospitals through a service-oriented project entitled the "Systems Improvement Services" program, and through the evaluation of a group reimbursement incentive project for hospitals, respectively. In addition, HSRC is an institutional member of the Georgia Hospital Association. Thus, area hospitals have provided sites for educational opportunities, demonstration projects, and research experiments.

Research in the field of emergency medical services (EMS) has enabled HSRC to foster cooperative ties with many organizations, including the Emergency Health Unit of the Georgia Department of Human Resources, Metropolitan (Atlanta) Emergency Medical Services, and the Georgia Heart Association. Too numerous to list separately, other organizations with EMS ties to HSRC include public and private entities at national, regional, state, county, and local levels.

Ongoing and new cooperative relationships with regional health planning and related agencies have enabled HSRC and the Program in

Health Systems to remain involved with and informed of important developments in health planning. A variety of arrangements have been undertaken with programs and personnel of the Georgia Health Systems Agencies (HSAs) and State Health Planning and Development Agency (SHPDA), and the Health Planning/Development Center (HP/DC) located in Atlanta, which is the HEW Region IV "Center for Health Planning." Continued working relationships with various divisions of the Georgia Department of Human Resources have also enhanced educational opportunities related to health planning.

Health Systems students have engaged in an abundant variety of externships established as a result of the formation of cooperative relationships with health planning agencies, health care institutions, and consulting firms and related health entities. Throughout the duration of this training project, student externships have been undertaken in 15 hospitals, 13 private physician or dental practices, 7 planning or developmental agencies, 2 consulting firms, a state prison, an HMO, and a county health department. While Atlanta-area hospitals and agencies have served as the main source of field training sites, students have been placed as far away as Pittsburgh, Pennsylvania (Children's Hospital), and in Spring Quarter 1977, students were placed in Health Systems Agencies in Albany and Warner Robins, Georgia. (Appendix 7 lists the field training sites used and the projects completed by students through June 1977.) The "mutually beneficial" aspect of the cooperative arrangements has truly been a noteworthy aspect of student field training. The latest in a succession of "payoffs" to participating field sites is the approval and funding of a Federal Rural Health Initiative planning grant written by a student during his externship with a Health Systems Agency. Another indicator of success of the field training program has been the number of requests for additional trainees made by participating sites. Many of the sites have had more than one trainee, and some have requested externs virtually every academic quarter.

At the graduate level, ten students have worked for seven health facilities or firms on sponsored graduate research assistantships (GRAs) since the initiation of this type of cooperative arrangement in Spring Quarter 1976. These assistantships, in which students are paid for services rendered to their sponsoring agency, help finance

graduate students' education and provide valuable "inhouse" experience for students soon to be seeking employment in the field. The sponsoring organizations which have participated in this arrangement are Atlanta Heart and Lung Clinic, Crawford W. Long Memorial Hospital of Emory University, Georgia Hospital Shared Services, Decatur Church of Christ Senior Housing HMO, Georgia Baptist Hospital, the Medicus Corporation, and Piedmont Hospital. The Atlanta Heart and Lung Clinic and Georgia Baptist Hospital are the newest participating facilities, where graduate students are conducting studies of (1) the effectiveness of cardiac catheterization for determining the advisability of heart-bypass surgery and (2) the effect of a cardiac patient rehabilitation program on health status outcome.

It is anticipated that increasing numbers of graduate students will be partially supported by sponsored assistantships as the number of participating organizations continues to grow. This has been an extremely successful program which has been well received by students and sponsoring agencies alike.

HSRC continues to award GRAs which allow students to participate in sponsored research projects. The students are able to make significant contributions to these projects while gaining valuable experience and financial assistance.

HSRC has recently undertaken a special "Community Outreach Program" to further enhance and develop cooperative relationships with certain health related organizations, institutions, agencies, and firms. Under this program, HSRC will conduct a series of projects with and for various health related entities on a non-profit, at-cost basis. The Outreach Program is intended to serve the interests of the participating entities by their use of the results of research and educational activities of HSRC, and to serve the interests of HSRC by its access to various facilities and data sources to promote research and educational objectives.

Auxiliary Resources

The full resources of Georgia Tech have been available for use by the Program in Health Systems. Of particular significance are the library and computing facilities. The Price Gilbert Library holds a scientific, technical, and management collection of nearly 900,000

volumes, plus over 1,000,000 microtext and other bibliographic units. The Library is one of 12 "Federal Scientific Report Centers" with a collection of reports totaling more than 850,000 titles. The Program in Health Systems has arranged for the acquisition of many health related books by the Library for students. Internally, the Program and HSRC maintain a Reference Room holding numerous health systems publications, reports, and teaching-learning materials. The Office of Computing Services operates two newly-installed computing systems, the Control Data Corporation (CDC) CYBER 70 and a CDC 6400. These systems are housed in the recently expanded Rich Electronic Computer Center. Appendices 11, 12, and 13 provide further information about the Price Gilbert Library, the Health Systems Reference Room, and the Office of Computing Services, respectively.

As part of the University System of Georgia, a variety of the System's resources are available to Georgia Tech and to the educational program. While specific resources are identified and utilized on an as-needed basis, three institutions deserve particular attention as special resources.

Through the joint faculty appointments of personnel of the Division of Systems and Computer Services of the Medical College of Georgia (MCG) with HSRC and the Program in Health Systems, the project has access to many of the medical school's facilities and resources. These include the Eugene Talmdage Memorial Hospital, clinical teaching unit of MCG, various service units of MCG, and the Medical College library.

Another sister institution of the University System and a major collaborator with HSRC is Georgia State University, conveniently located in downtown Atlanta and having health related resources and affiliations that are valuable to the faculty and students of the Program. Close relationships have been maintained with the Institute of Health Administration and School of Allied Health Sciences. The Georgia State Library contains many health related bound volumes, microfilms, and periodicals that were useful to trainees.

Finally, the library of Emory University and other resources of Emory were available to supplement the facilities and resources mentioned above. Several faculty members of Emory have served as staff consultants to HSRC, and through a joint program between Georgia

Tech's School of Information and Computer Science and Emory, various biomedical courses were available as electives to students in the Program.

Over the course of the training project, Program in Health Systems faculty compiled and revised several books and collections of readings for internal use and as course texts. These were:

Introduction to a Typical U. S. General Hospital, John R. Watt, Georgia Institute of Technology, Atlanta, Revised Edition, 1973, 187 pp., used for HS 3011.

Hospital Functions and Problems, Program in Health Systems, Georgia Institute of Technology, Atlanta, 1977, 91 pp., being used for HS 3011.

Non-Hospital Components of the Health Care System, Program in Health Systems, Georgia Institute of Technology, Atlanta, 1977, 324 pp., being used for HS 3021.

Community Health Problems, Program in Health Systems, Georgia Institute of Technology, Atlanta, 1977, 206 pp., being used for HS 4021.

Field Training Manual, Program in Health Systems, Georgia Institute of Technology, Atlanta, Revised Edition, 1976, 63 pp., being used for HS 3351, 4570-1-2-3, 6351, and 6570-1-2-3.

Field Training Reports, Program in Health Systems, Georgia Institute of Technology, Atlanta, Revised Edition, 1977, 55 pp., being used for HS 3351, 4571-2-3, 6351, and 6571-2-3.

A complete listing of all texts used in HS courses is shown in Appendix 14.

The Field Training Manual is an in depth description of undergraduate and graduate field training in the Program. The Manual explicitly discusses the advance preparations and academic requirements of HS field training, outlines the necessary field site arrangements to be made, and provides guidelines for project conduct and reporting procedures. In addition, the Manual includes sample copies of all departmental forms, field training course outlines, and other pertinent descriptive information. Copies of the Manual are normally given to site administrators prior to their participation in the Program, in an attempt to clarify all aspects of field training and to give an understanding of its significance as a component of education. In this respect, the Manual has been a most valuable "outreach" instrument for the Program.

Field Training Reports is a collection of materials for use as a guide in composing and typing formal written reports. Its purposes are to establish a standard format for reports by faculty, staff, and students of the Program, to illustrate a conventional means of handling a variety of report features, and to provide supplementary instructional materials related to report writing.

No equipment purchases were made with grant monies during the project. Several purchases have been previously reported, however, where State funds were utilized to obtain films, training aids for cardiopulmonary resuscitation (CPR) instruction, and other educational material used by trainees and project staff. Video tape equipment has been used to record student presentations and special programs for replay and critique in selected HS classes. Films and slides were borrowed from sources such as the National Medical Audio Visual Center, NBC Educational Enterprises, ABC Documentaries, and CBS Documentaries for Program use. In addition, six 30-45 minute films have been purchased for use in CPR training, and in describing the pharmaceutical industry, mental health problems and treatment, and heart attack symptoms and treatments. Other video tapings of relevant health care related programs have been made.

Numerous organized group tours and other special events have been utilized as supplementary educational experiences for students. These events included such activities as observing State legislature proceedings regarding health legislation, CPR classes, and tours of area hospitals.

In conjunction with the supplemental training project, "Health Systems Planning Option," the Program has utilized several new auxiliary resources in developing educational content. These include Applied Statistical Training Institute (ASTI) courses sponsored by the National Center for Health Statistics, the Program in Health Systems Resource File on university programs in or related to health systems planning, and the Association of University Programs in Health Administration.

An HSRC staff member attended three five-day ASTI courses covering three key areas of health planning identified by the Program in Health Systems faculty. These courses were:

<u>Course</u>	<u>Instructors</u>
ASTI 106 "Techniques for Evaluating Health Programs" Chicago, Illinois Sept. 13-17, 1976	Dennis Gillings, Ph.D., and Carol Hogue, Ph.D. Dept. of Biostatistics School of Hygiene and Public Health University of North Carolina
ASTI 107 "Information Methods for Health Planning" Chicago, Illinois June 21-25, 1976	Philip Reeves, D.B.A., and David Bergwall, Ph.D. Dept. of Health Care Administration George Washington University
ASTI 307 "Health Status Indexes" San Diego, California Sept. 27-Oct. 1, 1976	James Bush, M.D., M.P.H., and John Anderson, Ph.D. Dept. of Community Medicine University of California, San Diego

Participation in key ASTI courses has provided valuable input and guidance for new and refined HS courses, and has provided opportunities to interact and initiate correspondence with health systems practitioners and educators from around the nation. It is anticipated that further participation in key ASTI courses will continue to provide a significant resource for the Program.

The Program in Health Systems Resource File on university programs in or related to health systems planning was initiated to keep informed of developments in health systems education in other institutions. The Resource File will continue to be one source of input for Program and course syllabi and educational methods of the programs surveyed. Correspondence has been initiated with numerous institutions, giving rise to a considerable exchange of health systems education information with a number of program directors and faculty members. Such exchange of inquiries and information regarding health systems education will continue to promote improved cooperation between the Program in Health Systems and other institutions with related programs of study.

The Association of University Programs in Health Administration (AUPHA) is organized as a consortium of faculties in a cooperative effort to assist each of its 77 member colleges and universities in their efforts to improve health services delivery through education for administration. The AUPHA office in Washington, D. C. has on file information on curricula, course syllabi, and educational methods of its member institutions, many of which have programs of study in or related to health systems planning or analysis. The benefits of

affiliation with AUPHA have been investigated and information on member health systems programs of study has been acquired. This information has been added to the existing Resource File, and efforts toward membership in AUPHA have been initiated. It is anticipated that the School of Health Systems will become an AUPHA member during the coming year. AUPHA membership would further School of Health Systems involvement in promoting health systems education, and would insure continued access to AUPHA meetings, publications, and member programs of study documentation.

EVALUATION ACTIVITIES

As specified in the original project application, evaluation activities were to be concerned primarily with two major areas:

1. The "appropriateness" of the curricula and the suitability of teaching-learning methods and materials; and
2. The "success" of graduates in creating workable solutions to health care delivery problems for the institutions and organizations that employ them.

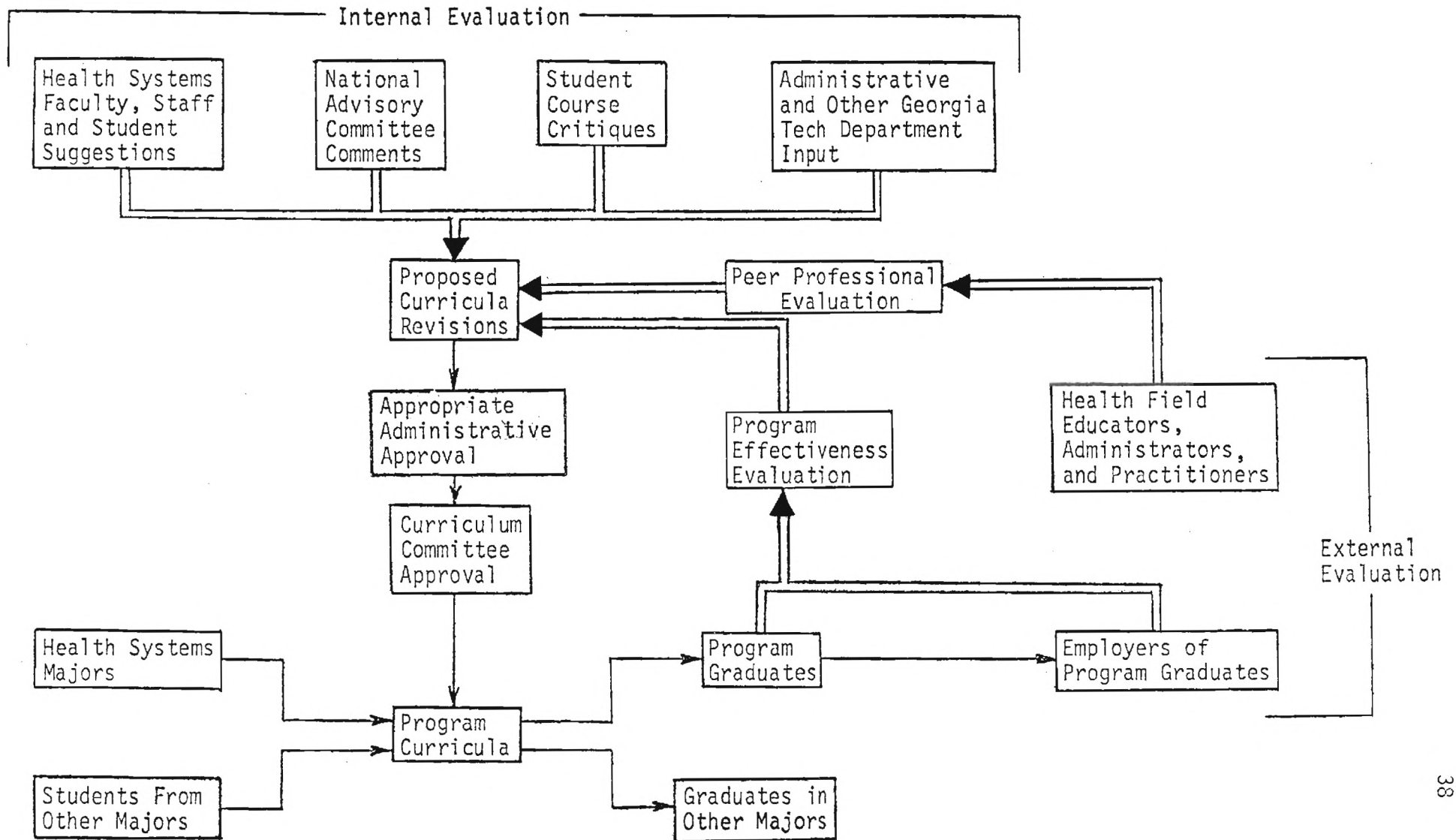
Evaluation activities associated with these two areas that have been pursued over the five-year project period can be classified as being either "internal" or "external" in nature. Internal activities are viewed as those that were performed in-house (e.g., by faculty, staff, NAC, students, Institute officials, and others) and deal primarily with the assessment and refinement of various aspects of the curricula. External activities, as the term implies, are defined as those that were performed with or by outside individuals or groups (e.g., educators and administrators in similar fields, employers in health-related organizations, and others) and concern both the curricula's appropriateness and the graduates' success. (The relationship between internal and external evaluation activities is illustrated in Figure 1.) Selected internal and external activities are described in the following section.

Internal Evaluation

Internal evaluation has, for the most part, been conducted on a continuous basis and has included both formal and informal types of activities. On an informal but routine basis, suggestions from HS faculty, staff, and students, in addition to input from Institute officials and other academic departments, were collected on a continuous basis. These suggestions and comments have been incorporated into the curricula as deemed appropriate.

Internal input of a more formal nature has come from quarterly critiques by students of the content and instruction in each HS course; from comments of the NAC; special student surveys of curricula appropriateness; and from the examination of results from a special comprehensive exam recently given to graduating students of the baccalaureate program.

Figure 1
Evaluation Process



Evaluation of each HS course has included a quarterly critique of the course by students enrolled in the course that quarter, using the course evaluation and critique questionnaire shown in Appendix 15. Individual comments and responses to these critiques were made available to appropriate faculty, who could then revise course content or instructional methods and materials accordingly. In addition, results of the critiques were also compiled in summary form at the end of each quarter. These summaries were distributed to concerned faculty, as well as being stored in historical course files.

Student reaction to instruction and courses was also obtained through a questionnaire administered under the auspices of the Institute. This questionnaire, administered for HS courses for the first time during the 04 Year, addressed three main areas: (1) instructional methods, (2) student progress, and (3) overall rating of the instructor and the course. Data from this questionnaire provided individual course instructors with additional information for revising and/or refining HS courses.

In order to provide a similar evaluative instrument on the programmatic level, a comprehensive Program-related questionnaire was designed to capture MSHS student reactions and suggestions and administered to graduate students during Year 03 of the project. The questionnaire covered out-of-department courses as well as HS offerings, curriculum relevance and construction, evaluation of faculty, and student goals. Results from the questionnaire proved very useful as additional input for the refinement of the MSHS curriculum. The questionnaire is presently being modified and will be administered to additional MSHS students on a regular basis.

Additional information influencing curriculum improvement was obtained via a special Health Systems Examination (HSE) combined with the Graduate Record Examination (GRE). As required by the Chancellor of the University System of Georgia, all BS graduates take an exit exam in their major area of study. To meet this requirement, HS seniors take both the GRE and the HSE. The GRE is administered nationally by the Education Testing Service and is used by many schools as a criterion for graduate school admission.

The HSE, which tests general health-related informational and quantitative abilities, has been administered semi-annually by the Program in Health Systems, starting in April 1976. As of June 1977, 33 students had taken the HSE, and 36 had taken the GRE. Standardizing the HSE so that meaningful comparisons of scores can be made is presently in progress.

The NAC, composed of prominent educators, practitioners, and administrators (see Appendix 3), provided input for Program activities throughout the course of the project. Comments from Committee members were obtained through correspondence and communications on an ad hoc basis and through regular meetings of the Committee with HS faculty, staff, and students on the Tech campus. Four meetings of the NAC were held, with the most recent being held in March 1977. As is evident from observing the agenda for this recent meeting (see Appendix 16), evaluative comments of the Committee have been provided on a wide range of topics, including overall Program activities, specific curricula proposals and changes, content of courses, financial assistance for students, and many others. Suggestions from the Committee, like those from other sources, have been incorporated in Program activities as appropriate.

Additional internal data used for evaluation of Program activities include those obtained from comprehensive records on each student who entered the Program, as well as various information, such as grade-level standing and departmental status, on non-HS majors who took HS courses. Analysis of data obtained in these records has provided insights into where recruitment efforts might be directed most effectively, what out-of-department students were most likely to enroll in specific HS courses, desirable arrangements (in terms of sequencing and scheduling) for HS course offerings, and various other areas.

External Evaluation

Evaluation activities of an external nature consisted primarily of the development and administration of two types of questionnaires--the first administered to three professional groups familiar with management engineering and its uses in the health environment, and the second to selected alumni of the undergraduate program and their employers, where appropriate.

Peer Professional Evaluation Questionnaire

The first questionnaire developed was referred to in previous Progress Reports as the Peer Professional Evaluation (PPE) questionnaire, and was sent to randomly selected health facility administrators, allied health and engineering educators, and health systems practitioners whose names appeared on one of three mailing lists: the American Institute of Industrial Engineers Hospital and Health Services Division roster, the HSRC mailing list, and the roster of the Hospital Management Systems Society. Questionnaire recipients were given the opportunity to respond to questions in four general areas: (1) Program objectives and purposes, (2) functions of Program graduates, (3) overall Program curriculum, and (4) HS core curriculum. The PPE questionnaire contained narrative descriptions related to each of these four areas. While the questionnaire addressed somewhat general areas, responses to the four programmatic activities were nevertheless overwhelmingly in support of the four areas as specified. (Results of the survey were provided in the Year 02 Progress Report, and are not included here.)

Alumni and Employer Questionnaires

The alumni and employer questionnaires were aimed at assessing both the appropriateness of the HS curricula and the success of the Program's graduates in job performance. The questionnaires were administered to selected graduates of the baccalaureate program and to the appropriate supervisors of those graduates who were employed in health-related positions. A different version of the basic questionnaire was administered to each of the following: (1) graduates who were employed in health-related positions, (2) supervisors of those graduates, and (3) graduates who for some reason had not been employed in a health-related position.

The questionnaires were administered in November 1976 to 27 undergraduate alumni who had graduated prior to September 1976.*

*A total of 29 students had graduated from the baccalaureate program prior to September 1976. Because two of these were enrolled on a full-time basis in the MSHS program, however, they were not included in the initial administration of these questionnaires.

Information on more recent graduates was not sought because the brief employment period of more recent graduates would have handicapped any assessment of job satisfaction and performance. This decision ruled out seeking information from the first graduating class of the MSHS program during the initial administration of the questionnaire. However, it is expected that similar questionnaires will be administered to graduates of the MSHS program, as well as additional graduates of the undergraduate program, at some time in the future.

Of the 27 undergraduate students, 16 had been employed in a health-related position for a period of at least three months. (Respondents from this group are hereinafter referred to as Group A.) Appropriate supervisors of these students numbered 16 as well. (Respondents from this group are categorized as Group B.) Eleven graduates, at the time the questionnaires were distributed, did not meet the desired criteria of having been employed in a full-time health-related position for at least three months. (Respondents from this group are referred to as Group C.) Although Group C did not include graduates who met the desired employment criteria at the time the questionnaires were administered, it should be noted that some later did, as is described in a subsequent section.

Feedback from all of these groups was quite favorable in regard to the appropriateness of the undergraduate curriculum, and results relating to graduates' success were also impressive, as reported by Groups A and B. The following section describes in detail the activities associated with these alumni and employer questionnaires.

THE ALUMNI AND EMPLOYER QUESTIONNAIRES

This section of the report provides detailed information on the development, administration, and evaluation of the alumni and employer questionnaires mentioned in the preceding section.

Development of the Questionnaires

In the development of the questionnaires, measurement of the appropriateness of the curricula and the success of Program graduates was foremost in design considerations. An additional consideration was to avoid making the measuring instrument too long, perhaps thereby discouraging someone from responding.

With the project's purpose and objectives in mind, in addition to other considerations, four general areas were chosen for examination via the questionnaires: (1) biographical information, (2) job-related information, (3) curricula-related information, and (4) general impressions of the Program. Within each of these categories, specific items were proposed as possible questions, based upon an analysis of the content of HS courses and upon input from project staff and other HS faculty and staff.

Initial drafts of the questionnaires were prepared and subsequently reviewed by HS faculty and staff. Based upon this review, the draft questionnaires were modified to include additional questions suggested by the reviewers and to eliminate ambiguous or unnecessary items.

Questions were structured, where appropriate, to allow responses to be made on a Likert scale. A Likert scale provides a continuum along which responses to questions or statements may be placed. The two ends of the continuum are usually bipolar and are designated by opposing descriptions such as "agree/disagree," and "not at all/very much." Theoretically, such scales could be continuously divisible with respondents being allowed to select any point along the scale. In practice, however, a limited number of integers are provided as stations between the bipolar pair. Usually there is a range from 5 to 15 intervals in the scale. In this case, an odd number of intervals was chosen to allow respondents to answer in a "neutral" position, as opposed to an even numbered scale which

forces respondents to make a choice toward one end of the scale or the other. By structuring questions and statements to be answered on such an ordinal scale, responses can be summed across a set of related items for analysis.

The revised questionnaires, with appropriate statements and questions structured to permit rated responses, were pre-tested to determine the coherency of questionnaire instructions, to identify ambiguous items, and to determine the time required to complete the questionnaires. The supervisor's questionnaire was pre-tested by two HS staff members and by two individuals in supervisory positions with health-related organizations; the longer of the alumni questionnaires by one MSHS student and two HS undergraduate students. On the basis of the pre-test results, additional modifications in the questionnaires were made. These modifications were concerned primarily with the sequence of questions and the major areas under consideration. (The length of the questionnaires was considered appropriate, since the average times required for completion among the pre-test group were approximately 17 minutes for the supervisor's version and 18 minutes for the longer of the alumni questionnaires--i.e., Questionnaire A.)

The final versions (A, B, and C) of the questionnaires are shown in Appendix 17, as are the cover letters and instructions which accompanied them when they were distributed. As shown, each questionnaire contains similar sections concerning biographical information (BIO), the HS curricula (C), and general impressions (GIMP) of the Program. In addition, Questionnaires A and B contain sections related to job facet (JF) information. Questionnaire C does not contain such a JF section, but does contain an additional section that asks three general questions related to Group C respondents' not being employed in health-related positions.

In those instances where Group A respondents had been employed in more than one health-related position, they were asked to respond to the questionnaire in relation to the first permanent, full-time position that they occupied for a period of three months or longer. (See the instructions accompanying Questionnaire A in Appendix 17 for additional details.) These employment criteria were chosen in order to assess, as closely as possible, the immediate and direct effects of

the HS educational experience itself.

To facilitate comparisons among the three groups, identical or similar questions were asked of each group, and most of the questions or statements addressing these topics were numbered the same in each of the three questionnaires. Where appropriate, several questions or statements pertaining to a specific topic were grouped into various categories. In the job facet (JF) section, for example, several questions were related primarily to job performance (JPERF), and are so classified. Other classifications in the JF sections include those shown in Table 7 (i.e., JPREP and JSATIS).

In the curricula (C) section of the questionnaires, information on several subject areas, techniques, and managerial problems was sought. Where appropriate, both preparation in and utility of items in these three areas were asked. (The utility of these was not asked of Group C, of course, since these respondents were not employed in health-related positions.) Information related to "Techniques" was not sought from Group B, since it was felt that the respondents might not be adequately familiar with all of the terms used in that section of Questionnaires A and C. In short, some requested information was unique to each of the three groups, and can be analyzed only as it relates to that group. Other information was common to all groups, and is classified as shown in Table 7. Specific questions or statements falling into various arbitrarily-designated categories are identified in the table.

Distribution of the Questionnaires

Activities associated with the distribution of the questionnaires included initial contacts with appropriate alumni to determine their current status. It was determined during these initial contacts if the alumnus met the desired employment criteria, and, if so, who the supervisor best qualified to comment on his/her performance was. (All health-related positions that the alumni had held were recorded, although information was sought only for those positions meeting the desired employment criteria.) In addition to the gathering of this information, the initial contacts served to notify alumni that a questionnaire would be sent to them, thereby avoiding the unexpected receipt of a questionnaire by any alumnus. It also requested that

Table 7
Categories of Selected Questionnaire Items

Category	Item Number		
	Questionnaire A	Questionnaire B	Questionnaire C
Job Preparation (JPREP)	JF-1,2,3	JF-1,3,5,6	Not Applicable
Job Performance (JPERF)	JF-4,5,6,7,8	JF-2,4,7,8,9,12,14,15,16,17,18	Not Applicable
Job Satisfaction (JSATIS)	JF-9,10,11,12	Not Applicable	Not Applicable
Subject Area Preparation (SPREP)	C-1,3,5,7,9,11,13,15,17,19	C-1,3,5,7,9,11,13,15,17,19	C-1,3,5,7,9,11,13,15,17,19
Subject Area Utility (SUTIL)	C-2,4,6,8,10,12,14,16,18,20	C-2,4,6,8,10,12,14,16,18,20	Not Applicable
Techniques Preparation (TPREP)	C-21,23,25,27,29,31,33,35,37,39,41,43,45,47,49,51,53,55,57,59,61,63,65,67,69,71,73,75,77	Not Applicable	C-21,23,25,27,29,31,33,35,37,39,41,43,45,47,49,51,53,55,57,59,61,63,65,67,69,71,73,75,77
Techniques Utility (TUTIL)	C-22,24,26,28,30,32,34,36,38,40,42,44,46,48,50,52,54,56,58,60,62,64,66,68,70,72,74,76,78	Not Applicable	Not Applicable
Managerial Problems Preparation (MPREP)	C-79,81,83,85,87,89,91,93,95,97,99,101,103,105,107,109	C-79,81,83,85,87,89,91,93,95,97,99,101,103,105,107,109	C-79,81,83,85,87,89,91,93,95,97,99,101,103,105,107,109
Managerial Problems Utility (MUTIL)	C-80,82,84,86,88,90,92,94,96,98,100,102,104,106,108,110	C-80,82,84,86,88,90,92,94,96,98,100,102,104,106,108,110	Not Applicable
General Impressions of the Program (GIMP)	GIMP-1,2,3,4	Not Applicable	Not Applicable

the alumni notify their supervisors that a similar questionnaire would be forwarded to them. The contacts also served to identify which of the alumni were to receive Questionnaire A and which were to receive Questionnaire C.

Of the 27 alumni who had graduated prior to September 1976 (excluding those 2 previously mentioned), initial contacts by phone were made with all but 3. Attempts to locate 2 were unsuccessful, so questionnaires were mailed to those 2 at the most recent address on file. No attempt was made to reach the third by phone, since Program records indicated that he was employed in a health-related position in Saudi Arabia. Reactions of the alumni to the forthcoming questionnaires were favorable, and, while difficult to verify, these initial contacts are thought to have had a positive influence on the completion and return of the questionnaires.

After the initial contacts were made, the questionnaires were mailed with self-addressed, stamped envelopes accompanying the questionnaires to facilitate return. A deadline for returning the questionnaire was specified in the cover letter accompanying each one (see Appendix 17).

Compilation of Data

Of the total number of questionnaires distributed to alumni (27) and their supervisors (16), 37 (88%) were ultimately returned, as shown in Table 8. This is a rather high rate of return for questionnaires of this type, perhaps due to the prior notification to alumni (and their subsequent notification to their supervisors) that the questionnaires were forthcoming, and perhaps partially due to follow-up activities by project staff. Of the questionnaires not returned, one was apparently lost in the mail (according to the alumnus contacted in follow-up), two were those sent to Saudi Arabia, and two were for the alumni for whom attempted initial contacts were unsuccessful. Another questionnaire was never received by the supervisor for whom it was intended, according to follow-up with that supervisor. (However, a duplicate questionnaire subsequently mailed to that supervisor was not returned, either.)

Table 8
Questionnaires Distributed and Returned

Questionnaire	Number Sent	Number Returned	Percent
A	16	14	88%
B	16	14	88%
C	11	9	82%
Total	43	37	86%

As shown in Table 9, 24 questionnaires were received within the requested time frame. (Interestingly, Group B respondents were more prompt in returning the questionnaires than were Group A or Group C respondents.) After the specified return deadline had passed, follow-up phone calls were made to most of the recipients of outstanding questionnaires. Thirteen more questionnaires were received after follow-up.

Table 9
Questionnaires Returned:
With and Without Follow-up

Questionnaire	Responses With- out Follow-up		Responses With Follow-up		Total Responses	
	Number	Percent	Number	Percent	Number	Percent
A	8	57%	6	43%	14	100%
B	12	85%	2	15%	14*	100%*
C	4	44%	5	56%	9	100%
Total	24	65%	13	35%	37	100%

*One B questionnaire was subsequently omitted from consideration, thereby making the total number of Group B respondents equal to 13.

Although there were 14 matching Group A and Group B questionnaires returned, one of the Group B respondents declined to complete the questionnaire, thereby reducing the total number of supervisors' questionnaires available for analysis to 13. (The supervisor choosing not to complete the questionnaire felt that his relationship with the corresponding alumnus was not a typical employer-employee relationship, since the alumnus was then holding an assistantship under the supervisor

while enrolled in graduate school.)

Information from the questionnaires was coded and compiled in a format suitable for statistical analyses, which were conducted using the Statistical Package for the Social Sciences (SPSS) computer program. This format will allow information from questionnaires administered in the future to be combined with the original data for future analysis.

Analysis of Data

Statistical analyses were performed both intra- and inter-group, with the analyses directed at determining significant differences between individual responses and groups of responses.

Intra-Group Statistics and Analysis

Within each group, frequency distributions of questionnaire responses were compiled, mean scores for appropriate questionnaire items were determined, and the standard deviation for these items was calculated. (These results are shown for Group A in Table 13; for Group B in Table 18; and for Group C in Table 22.)

Additional analyses included comparisons of individual "Preparation" and "Utility" responses within Group A and Group B, which consisted of examining mean scores for SPREP vs. SUTIL, TPREP vs. TUTIL, and MPREP vs. MUTIL; comparison of aggregate mean scores for these variables; and investigation of different responses while controlling for "salary" and "grade point average" (GPA) groups. The results of these and other comparisons are discussed in a subsequent section.

Inter-Group Statistics and Analyses

In comparing the responses of the three groups, various combinations of item responses were compared on an aggregate basis, utilizing mean scores for comparison. In addition, selected individual items were compared for Groups A and B and for Groups A and C, where appropriate. The results of these and other comparisons are described in the following section.

Discussion of Results

In reviewing questionnaire data and the results of the various statistical analyses, it is desirable to keep in mind the small size

of the responding population groups: 14 in Group A, 13 in Group B, and 9 in Group C. With populations of this size, many of the conclusions drawn and interpretations offered must of necessity be rather tentative. In fact, questionnaire responses are probably best viewed simply as indicators of areas for further examination. While it would be ill-advised to significantly alter the HS curricula on the basis of the questionnaire responses at this point, future administrations of the questionnaires will provide a larger base upon which revisions in the curricula can perhaps be more comfortably made. In the meantime, responses to these initial questionnaires can be examined on a preliminary basis.

In this section, results of the questionnaires are presented first on an individual basis, starting with Questionnaire A, followed by results of Questionnaires B and C. Questionnaire results are presented by sections (e.g., BIO section, Job Facet section) contained in each questionnaire. Subsequent to the presentation of individual questionnaire results is a discussion of the inter-group comparisons.

Questionnaire A

BIO Section. From responses to the "Present Occupation" item in the BIO section of Questionnaire A, Group A respondents were categorized as shown in Table 10. Ten Group A respondents indicated that they planned to work in the health systems field in the future, while three expressed some uncertainty in this regard. (One did not respond to this item.) Judging from the otherwise favorable responses of this group, the uncertainty expressed may be more attributable to the difficulty in assessing what the future holds than to any displeasure with health systems activities. Both of the alumni who were pursuing further education on a full-time basis planned to work in the health systems field.

Graduation dates for Group A ranged from March 1974 to July 1976, as shown in Table 11. The dates shown correspond to graduation from the Health Systems Program, although four of the respondents indicated that they had pursued (or were pursuing) additional degrees on either a part-time or full-time basis.

The length of time Group A respondents had been employed in the position meeting the employment criteria averaged 12 months,

Table 10
Status of Group A Respondents

Status	Number
Consulting Management Engineer	4
In-house Management Engineer	4
Administration/Management	3
Student	2
Self-employed	1

Table 11
Graduation Dates of Alumni Respondents

Graduation Date	Number of Graduates	
	Group A	Group B
March 1974	1	
June 1974	2	1
December 1974	1	
March 1975		1
June 1975	2	2
August 1975	2	1
December 1975	1	
March 1976		2
June 1976	5	2

ranging from a low of 5 months to a high of 27 months. Four of the 14 respondents had changed organizations. One of these was an alumnus who became self-employed in a non-health related field after working as an in-hospital management engineer for 27 months. Two were those citing their present status as "student."

Of the 12 respondents reporting salary information (which was optional), 7 indicated that their current salary was higher than their initial salary. The other 5 reported the same salary level (although there could be an increase of \$1,999 without necessarily showing up on the questionnaire), but 4 of these graduates had been employed less than 6 months. Salary information reported is shown in Table 12.

Table 12
Group A Salary Levels

Salary Level	Initial	Current
Less than \$10,000	5	0
\$10,000-\$11,999	3	5
\$12,000-\$13,999	3	4
\$14,000-\$15,999	0	1
\$16,000-\$17,999	1	2
Greater than \$18,000	0	0

Section JF. Responses to individual items in this section are shown in Table 13, which indicates the distribution of responses as well as the mean score for each item. As previously noted, a "3" on the 5-point scale is considered "neutral," with numbers < 3 tending to be on the "negative" side and those > 3 on the "positive" side. (See the instructions accompanying the questionnaires in Appendix 17.) Scores are interpreted using this rationale.

Mean scores for all but one item (JF-4) in this section are > 3. The mean score for item JF-4, having to do with the employee's efforts in reducing costs or increasing revenue in her/his organization, is 2.9, however. (A mean of 2.9 for this item should not necessarily be interpreted as less than desirable, since it is not known to what extent the respondent's efforts were supposed to

Table 13
Group A: Response Distribution
for Individual Items

Item	Responses					Number Responding	Mean	Standard Deviation
	1	2	3	4	5			
Section JF								
1			2	7	5	14	4.2	.7
2		2	1	4	7	14	4.1	1.1
3			2	8	4	14	4.1	.7
4	1	4	4	5		14	2.9	1.0
5		1	3	8	2	14	3.8	.8
6			6	3	5	14	3.9	.9
7				4	9	13	4.7	.5
8			1	6	6	13	4.4	.7
9		2	2	3	7	14	4.1	1.1
10		3	3	5	3	14	3.6	1.1
11		5	1	5	3	14	3.4	1.2
12		1	1	6	6	14	4.2	.9
13	1		7	3	3	14	3.5	1.1
14	2	1	5	3	3	14	3.3	1.3
Section C								
1		7	4	3		14	2.7	.8
2	2	4	4	3	1	14	2.8	1.2
3		2	8	3	1	14	3.2	.8
4	2	6	3	2		13	2.4	1.0
5				8	6	14	4.4	.5
6			2	7	5	14	4.2	.7
7			3	6	5	14	4.1	.8
8		2	3	5	4	14	3.8	1.1
9		1	3	5	5	14	4.0	1.0
10			2	6	6	14	4.3	.7
11		2	5	6	1	14	3.4	.9
12	3	1	5	2	3	14	3.1	1.4
13			1	9	4	14	4.2	.6
14			2	4	8	14	4.4	.8
15			3	7	4	14	3.1	.7
16	1	1	1	3	8	14	4.1	1.3
17		2	4	5	3	14	3.6	1.0
18		3	2	2	7	14	3.9	1.3
19		4	5	4	1	14	3.1	.9
20		7	4	3		14	2.7	.8
21		3	8	2	1	14	3.1	.8
22	1	2	4	5	2	14	3.4	1.2
23		1	8	4	1	14	3.4	.7
24		4	3	4	3	14	3.4	1.2
25	1	6	4	2	1	14	2.7	1.1
26	1	3	2	7	1	14	3.3	1.1
27	3	1	6	3	1	14	2.9	1.2
28	2	2	6	2	2	14	3.0	1.2
29		3	2	8	1	14	3.5	.9
30	1		4	5	4	14	3.8	1.1

Table 13--Continued

Item	Responses					Number Responding	Mean	Standard Deviation
	1	2	3	4	5			
31	3	4	6	1		14	2.4	.9
32	1	3	4	4	2	14	3.2	1.2
33		7	4	2	1	14	2.8	1.0
34	5	4	3	1	1	14	2.2	1.3
35		7	3	3	1	14	2.9	1.0
36	4	3	5	2		14	2.4	1.1
37	4	3	4	3		14	2.4	1.2
38	4	3	1	2	4	14	2.9	1.7
39		4	5	3	2	14	3.2	1.1
40	2	1	3	5	3	14	3.4	1.3
41	2	3	4	5		14	2.9	1.1
42	2		4	5	3	14	3.5	1.3
43		1	3	8	2	14	3.8	.8
44		2	3	3	6	14	3.9	1.1
45			5	7	2	14	3.8	.7
46	1		5	5	3	14	3.6	1.1
47			2	5	7	14	4.4	.7
48	1	2	1	2	8	14	4.0	1.4
49			4	6	4	14	4.0	.8
50	2	1	5	2	4	14	3.4	1.4
51			3	7	4	14	4.1	.7
52	2	1	4	1	6	14	3.6	1.5
53	1	1	7	1	4	14	3.4	1.2
54	3	3	5	1	2	14	2.7	1.3
55	1	1	8	3	1	14	3.1	.9
56	6	5	3			14	1.8	.8
57	2	1	5	2	4	14	3.4	1.4
58	1	3	4	1	5	14	3.4	1.4
59	1	4	7		2	14	2.9	1.1
60	5	4	3	2		14	2.1	1.1
61	5	3	3	2		13	2.2	1.1
62	9	1	2	1		13	1.6	1.0
63	5	3	3	2		13	2.2	1.1
64	9	2	1	1		13	1.5	1.0
65	2	3	5	2	2	14	2.9	1.3
66	2	2	1	4	5	14	3.6	1.5
67		5	6	2	1	14	2.9	.9
68	5	1	3	3	2	14	2.7	1.5
69	4	6	2	2		14	2.1	1.0
70	5	4	3	1	1	14	2.2	1.3
71	2	4	5	1	2	14	2.8	1.3
72	3	2	3	4	2	14	3.0	1.4
73		1	2	8	3	14	3.9	.8
74			1	4	9	14	4.6	.6
75			4	7	3	14	3.9	.7
76	1		2	2	9	14	4.3	1.2
77	2	2	7	1	1	13	2.8	1.1
78	3	1	4	2	3	13	3.1	1.5
79			1	9	4	14	4.2	.6
80			1	6	7	14	4.4	.6

Table 13--Continued

Item	Responses					Number Responding	Mean	Standard Deviation
	1	2	3	4	5			
81		1	8	3	2	14	3.4	.9
82			2	6	6	14	4.3	.7
83	2	2	4	6		14	3.0	1.1
84		1	4	8	1	14	3.6	.7
85	3	6	4		1	14	2.3	1.1
86	1	2	5	2	4	14	3.4	1.3
87		5	8		1	14	2.8	.8
88		1	6	2	5	14	3.8	1.1
89		5	6	1	2	14	3.0	1.0
90	1		5	6	2	14	3.6	1.0
91		1	7	5	1	14	3.4	.8
92			6	4	4	14	3.9	.9
93	2	5	6	1		14	2.4	.9
94			6	2	6	14	4.0	1.0
95	1	3	6	3	1	14	3.0	1.0
96		1	5	3	5	14	3.9	1.0
97			3	8	3	14	4.0	.7
98			1	6	7	14	4.4	.6
99	4	8	2			14	1.9	.7
100	1	2	3	6	2	14	3.4	1.2
101	1	6	3	3	1	14	2.8	1.1
102	2	1	5	3	3	14	3.3	1.3
103	2	6	5	1		14	2.4	.8
104	1	2	4	2	4	13	3.5	1.3
105	1	4	4	4	1	14	3.0	1.1
106	1	1	5	4	3	14	3.5	1.2
107	2	3	5	2	2	14	2.9	1.3
108		2	3	4	5	14	3.9	1.1
109	10	2	2			14	1.4	.8
110	2	2	4	3	3	14	3.2	1.4
111		1	2	7	4	14	4.0	.9
112	1	1	2	2	8	14	4.1	1.3
Section GIMP								
1		1	2	9	2	14	3.9	.8
2		1	2	8	3	14	3.9	.8
3		4	5	2	3	14	3.3	1.1
4		2	4	4	4	14	3.7	1.1
5	5	2		2	5	14	3.0	1.8
6			1	1	12	14	4.8	.6
7			2	6	6	14	4.1	1.0

reduce costs or increase revenue in the organization.) Hence, it can be stated that the overall response to this section was generally favorable.

As previously mentioned, several questions or statements are arbitrarily grouped into categories (see Table 7). For those items related to Job Preparation (JPREP), the mean score is 4.2; for Job Performance (JPERF), 3.8; and for Job Satisfaction (JSATIS), 3.8. These scores are included, along with the mean scores for other categorical variables, in Table 23.

Section C. Table 13 shows the distribution of responses to items in Section C of Questionnaire A, while Table 14 shows a comparison of Preparation (P) and Utility (U) mean scores for each item in the three categories of (1) Subject Areas, (2) Techniques, and (3) Managerial Problems. To determine if a significant difference existed in the responses to these items, mean scores were statistically compared through the use of a two-tailed t-test, which involves testing of the hypothesis of equal means.

Statistical significance is indicated through a p-value, which corresponds to the probability that an observed difference in means is due solely to chance. A high value of p (e.g., 0.9) indicates that any observed difference is probably due to chance variation, whereas a low p-value (e.g., 0.05) indicates that there is a low probability that the difference is due to chance. In other words, a low value of p indicates that any observed difference is more likely to be statistically significant. Statistical significance is noted at two levels in the following sections: $p \leq 0.05$ (significant) and $p \leq 0.001$ (highly significant).

As indicated in Table 14, the difference between P and U mean scores was statistically significant (at a level of $p \leq 0.05$) for only one Subject Area, "Information Systems," for which the U mean score was higher than the P mean score.* Overall, the scores given to most

*In general, a U mean score higher than the corresponding P mean score indicates that perhaps additional coverage of a particular item is warranted in the curricula, provided that the U score is "positive" (i.e., > 3.0). This, of course, is dependent also upon various other factors (e.g., type of job held by the employee, length of employment, etc.) and any interpretations of P and U mean scores should be made with proper consideration given to such factors.

Table 14

Group A: Comparison of Preparation and
Utility Mean Scores for Subject Areas,
Techniques, and Managerial Problems

Item	Mean Score		p Value
	Preparation	Utility	
<u>Subject Areas</u>			
Accounting	2.7	2.8	.836
Economics	3.2	2.4	.051
Health Systems			
a. General Orientation to the Health Field	4.4	4.2	.385
b. Health Issues, Problems, and Needs	4.1	3.8	.315
c. Hospital Functions and Organization	4.0	4.3	.336
d. Non-hospital Components of the Health Care System	3.4	3.1	.336
e. Health Systems Analysis Techniques	4.2	4.4	.487
Information Systems	3.1	4.1	.026*
Probability and Statistics	3.6	3.9	.566
Psychology and Sociology	3.1	2.7	.234
<u>Techniques</u>			
Computer Programming and Data Processing	3.1	3.4	.365
Engineering Economy and Economic Decision-making	3.4	3.4	.807
Cost Accounting	2.7	3.3	.205
Health Facility Planning	2.9	3.0	.699
Facility Layout	3.5	3.8	.391
Materials Handling	2.4	3.2	.054

Table 14--Continued

Item	Mean Score		p Value
	Preparation	Utility	
Mathematical Modeling	2.8	2.2	.179
Optimization Methods	2.9	2.4	.187
Forecasting	2.4	2.9	.187
Inventory Management and Control Techniques	3.2	3.4	.426
Job Analysis and Evaluation Techniques	2.9	3.5	.145
Manpower Scheduling	3.8	3.9	.583
Work Scheduling	3.8	3.6	.547
Methods Analysis and Work Simplification	4.4	4.0	.336
Time Study	4.0	3.4	.145
Work Sampling	4.1	3.6	.265
Standard Data	3.4	2.7	.055
Predetermined Motion Times	3.1	1.8	.000**
Descriptive Statistics	3.4	3.4	.844
Estimation and Hypothesis Testing	2.9	2.1	.065
Bivariate Analysis	2.2	1.6	.170
Multivariate Analysis	2.2	1.5	.120
Project Management Techniques	2.9	3.6	.210
Quality Control	2.9	2.7	.630
Simulation	2.1	2.2	.775
Queuing Theory	2.8	3.0	.657
Staffing	3.9	4.6	.057
Systems Analysis	3.9	4.3	.355
Decision Theory	2.8	3.1	.549

Table 14--Continued

Item	Mean Score		p Value
	Preparation	Utility	
<u>Managerial Problems</u>			
Improving Work Methods	4.2	4.4	.385
Management of Information	3.4	4.3	.005*
Job Analysis and Evaluation	3.0	3.6	.082
Employee Motivation and Compensation	2.3	3.4	.007*
Anticipating Future Requirements	2.8	3.8	.010*
Inventory Management and Control	3.0	3.6	.071
Facilities Design and Space Utilization	3.4	3.9	.054
Costing and Economic Evaluation	2.4	4.0	.001**
Resource Allocation	3.0	3.9	.028*
Staffing and Scheduling	4.0	4.4	.028*
Personnel Administration	1.9	3.4	.000**
Planning Health Facilities	2.8	3.3	.265
Financial Management and Control	2.4	3.5	.037*
Project Management	3.0	3.5	.265
Cost Containment	2.9	3.9	.026*
Compliance with Regulatory Requirements	1.4	3.2	.000**

*Significant ($p < .05$).**Highly significant ($p \leq .001$).

of the Subject Areas were favorable, with mean scores > 3.0 for each one. Preparation in "Accounting" was rated < 3.0 by the group, but so was the utility of this topic.

In the Techniques category, the difference in P and U mean scores was statistically significant for "Predetermined Motion Times." The p-values for several other Techniques were only slightly over the specified significance level, however, as is shown in Table 14. Those Techniques in this group include "Materials Handling," "Standard Data," and "Staffing."

The utility of some academic preparation in most of the Managerial Problems was generally rated somewhat higher than the preparation the Group A respondents indicated that they had received in these problem areas. As shown in Table 14, the difference between several P and U mean scores is statistically significant, indicating perhaps that additional coverage is warranted for these items.

In response to item C-113, which asked respondents about topics not covered in the Program that should be covered, suggestions for inclusion came from 12 respondents. Suggested topics to be covered in the Program included: finance, management, descriptive statistics, accounting, unionization, personnel relations, probability and statistics, and computer technology. Many of these topics are presently covered in the Program, as should have been apparent to the respondents from reviewing the lists of Subject Areas, Techniques, and Managerial Problems shown in Section C. Some respondents may have answered item C-113 in terms of what was covered when they went through the Program, or some may have listed certain topics to suggest that additional coverage in them be offered. Whatever the explanation for their responses, it should be emphasized that coverage in most, if not all, of the suggested areas is included in the present curricula.

Section GIMP. All of the items in this section have a mean score greater than 3.0, with the mean score for respondents' general impression of the Program (GIMP) being a fairly high 3.7. Respondents expressed a high degree of satisfaction with the education provided to them by the Program, and felt that the need for health systems practitioners was high (4.8), and that the demand for them within the next five years would be high (4.1).

Additional Analyses on Group A Responses. A comparison of Group A responses to selected categorical variables was conducted, with the results shown in Table 15. In the analysis, Job Preparation was compared with Job Performance, and preparation in curricula-related items was compared to utility. As indicated, the utility of some prior exposure in Managerial Problems was reported as being higher than the preparation the respondents felt they had received in these areas.

Table 15
Group A: Comparison of Selected
Categorical Variables

Variable	Mean Score	p Value
(a) JPREP	4.2	.084
(b) JPERF	3.8	
(a) SPREP	3.6	.803
(b) SUTIL	3.6	
(a) MPREP	2.9	.001**
(b) MUTIL	3.7	
(a) TPREP	3.1	.907
(b) TUTIL	3.1	

**Highly significant ($p \leq .001$).

Group A responses to various categorical variables were also analyzed in relation to GPAs and salary levels. In examining differences according to GPAs, respondents were divided into two groups: those respondents (8) with GPAs ≥ 2.7 and those (6) with GPAs < 2.7 . (The value of 2.7 was chosen since it is the GPA minimally required for admission to graduate school at Georgia Tech.) While the comparison of the mean scores of these two groups for the categorical variables shown in Table 16 revealed no statistically significant differences, it is nevertheless interesting to note some of the differences shown, regardless of the degree of significance. For instance, two (TPREP and MPREP) of the three curricula-related P mean scores are lower for those with GPAs ≥ 2.7 than for those with GPAs < 2.7 , which seems a bit unexpected. In addition, all of the U mean scores

are higher for those with GPAs < 2.7, indicating that they find prior exposure to these items more useful in their jobs than do those with GPAs \geq 2.7.

Table 16
Group A: Comparison of Categorical Variables
by Grade Point Average (GPA)

Variable	Mean Score		p Value
	GPA \geq 2.7	GPA < 2.7	
JPREP	4.2	4.1	.776
JPERF	3.6	4.1	.228
JSATIS	3.6	4.2	.160
SPREP	3.6	3.6	.919
SUTIL	3.4	3.7	.245
TPREP	2.9	3.4	.141
TUTIL	2.8	3.4	.178
MPREP	2.7	3.0	.327
MUTIL	3.7	3.8	.833
GIMP	3.8	3.5	.319

In examining differences in responses by salary level, respondents reporting salary information were divided into those whose reported current salary was \geq \$12,000 (7 respondents) and those whose was < \$12,000 (5 respondents). Differences in several mean scores for the categorical variables in Table 17 are statistically significant. Interestingly, all of the U mean scores for those whose salary was < \$12,000 were lower than the U scores for the other group. The lower U scores may have some correlation with lower salaries, but such a conclusion at this point would be mere speculation. It is also interesting to note the GIMP scores and the JSATIS scores. Both salary groups indicated a high and nearly equivalent degree of satisfaction with their jobs. As reflected in the means, both groups had a favorable impression of the Program, with those in the lower salary group indicating a slightly higher impression.

Table 17
Group A: Comparison of Categorical
Variables by Salary Level

Variable	Mean Score		p Value
	Salary \geq \$12,000	Salary < \$12,000	
JPREP	4.3	4.1	.639
JPERF	4.1	3.7	.234
JSATIS	3.8	3.8	.968
SPREP	3.8	3.5	.313
SUTIL	3.7	3.2	.050*
TPREP	3.2	3.2	.827
TUTIL	3.5	2.7	.038*
MPREP	2.9	3.1	.593
MUTIL	4.1	3.3	.044*
GIMP	3.6	4.0	.265

*Significant ($p \leq .05$).

Questionnaire B

BIO Section. Information reported by supervisors of Group A respondents revealed that the supervisors had been employed in the health field for an average of 4.9 years, ranging from 1 to 8 years (11 out of 13 reporting). Length of time with their present organizations averaged 2.9 years, ranging from 1 to 6 years (11 out of 13 reporting). The average length of time Group B respondents had worked with the corresponding alumni was 8.9 months, ranging from 3 to 18 months. Familiarity with the work of the appropriate alumnus was rated at 4.5 by the supervisors.

Section JF. In Section JF, the mean scores for the categorical variables JPREP and JPERF were 3.4 and 3.6, respectively, indicating that the supervisors were favorably impressed with both the educational

preparation the alumni had received and their job performance. On an individual basis, 17 (79%) of the items in this section had mean scores > 3 . (Mean scores and distribution of responses for all items in this section are shown in Table 18.) Of the 4 items with means < 3.0 , the response scales of 2 (JF-3 and JF-4) were inadvertently reversed. The effects of these reversals are unknown, but they are thought to have adversely influenced the responses to these items, since some of the responses to these items appear to contradict sentiments expressed by the respondents elsewhere.

Generally, supervisors' responses to this section were quite favorable. For items in this section that are similar to items in Section JF of Questionnaire A, the supervisors' responses varied only slightly (with one exception) from Group A responses. A comparison of scores for these similar A and B items is shown in Table 26 and is discussed further in a subsequent section.

Section C. Table 18 shows the distribution of responses to items in Section C of Questionnaire B, while Table 19 shows a comparison of Preparation (P) and Utility (U) mean scores for each item in the categories of Subject Areas and Managerial Problems. As before, a t-test was conducted to determine significant differences between responses. While most of the mean scores for both SPREP and MPREP were favorable (i.e., > 3.0), it is interesting to note that U scores exceeded P scores in all but two instances--"Economics" and "Inventory Management and Control." As shown in Table 19, these differences were statistically significant in six cases. While the differences in P and U scores are not large and the majority are on the "positive" side, the generally higher U scores indicate that perhaps additional preparation in the Subject Areas and Managerial Problems listed would be appropriate.

In response to item C-113, which asked respondents if there were any subject areas and/or managerial problems not listed in the questionnaire which they felt should be incorporated into the HS curricula, suggestions for inclusion came from five respondents. The suggested topics included computer technology, statistics, personnel relations, communications, and accounting. Although not all of these suggested topics were shown in Questionnaire B in the identical terms, it should be noted that these topics are included in the present HS curricula.

Table 18
Group B: Response Distribution
for Individual Items

Item	Responses					Number Responding	Mean	Standard Deviation
	1	2	3	4	5			
Section JF								
1		3	5	2	3	13	3.4	1.1
2			3	5	5	13	4.2	.8
3	3	2	3	4	1	13	2.8	1.3
4	4	3	4	2		13	2.3	1.1
5		2	3	5	3	13	3.7	1.0
6		2	3	6	2	13	3.6	1.0
7		1		7	5	13	4.2	.8
8	1	4	3	4		12	2.8	1.0
9		3	5	4	1	13	3.2	.9
10	5	2	4	1	1	13	2.3	1.3
11		3	4	4	2	13	3.4	1.0
12		1	3	4	5	13	4.0	1.0
13		2	1	6	4	13	3.9	1.0
14		2	3	6	2	13	3.6	1.0
15		2	2	3	6	13	4.0	1.2
16		3	2	5	3	13	3.6	1.1
17		2	1	7	3	13	3.8	1.0
18		3	2	2	6	13	3.8	1.3
19		2	1	5	5	13	4.0	1.1
Section C								
1	1	3	7	1		12	2.7	.8
2	1	1	4	6	1	13	3.4	1.0
3	1	1	6	2		10	2.9	.9
4	2	3	6	2		13	2.6	1.0
5		1	2	7	3	13	3.9	.9
6		1	1	2	9	13	4.5	1.0
7		2	3	7	1	13	3.5	.9
8		2	3	1	7	13	4.0	1.2
9		1	3	6	3	13	3.8	.9
10			1	3	9	13	4.6	.7
11			5	7		12	3.6	.5
12		2	3	3	5	13	3.8	1.1
13			3	6	4	13	4.1	.8
14		2	1	2	8	13	4.2	1.2
15		1	6	1	4	12	3.7	1.1
16		1	3	2	7	13	4.2	1.1
17		1	10	1	1	13	3.2	.7
18		3	2	7	1	13	3.5	1.0
19		2	7	2	2	11	3.0	.6
20			4	3	4	11	4.0	.9
79		3	3	4	2	12	3.4	1.1
80			2	2	9	13	4.5	.8
81			6	2	3	11	3.7	.9
82			3	5	5	13	4.2	.8
83	1		5	3		9	3.1	.9

Table 18--Continued

Item	Responses					Number Responding	Mean	Standard Deviation
	1	2	3	4	5			
84		2	1	5	4	12	3.9	1.1
85	1	1	6	2		10	2.9	.9
86	1	2	4	3	3	13	3.4	1.3
87	2		3	4	1	10	3.2	1.3
88	1	2	5	2	3	13	3.3	1.3
89			4	2	3	9	3.9	.9
90	1	1	6		4	12	3.4	1.3
91	1	1	2	3	2	9	3.4	1.3
92	1	2	1	2	5	11	3.7	1.5
93	1	1	4	4	1	11	3.3	1.1
94	1		4	5	3	13	3.7	1.1
95	1	1	4	4		10	3.1	1.0
96	1	1	3	4	3	12	3.6	1.2
97	1	2	1	5	2	11	3.5	1.3
98			1	2	10	13	4.7	.6
99		3	5			8	2.6	.5
100	1	2	3	2	3	11	3.4	1.4
101	1	1	2	4	1	9	3.3	1.2
102	1	1	3	3	3	11	3.5	1.3
103		4	3	3		10	2.9	.9
104	1		2	7	2	12	3.8	1.1
105		1	3	4	2	10	3.7	.9
106		1	4	2	6	13	4.0	1.1
107	1		4	4	2	11	3.5	1.1
108		2	1	2	8	13	4.2	1.2
109	1	3	4	3		11	2.8	1.0
110	1	1	7	2	2	13	3.2	1.1
Section GIMP								
1			2	3	8	13	4.5	.8
2		1	2	2	8	13	4.3	1.0
3		3	3	4	3	13	3.5	1.1
4			4	6	3	13	3.9	.8
5			5	4	4	13	3.9	.9

Table 19
Group B: Comparison of Preparation and
Utility Mean Scores for Subject Areas
and Managerial Problems

Item	Mean Score		p Value
	Preparation	Utility	
<u>Subject Areas</u>			
Accounting	2.7	3.3	.054
Economics	2.9	2.8	.591
Health Systems			
a. General Orientation to the Health Field	3.9	4.5	.110
b. Health Issues, Problems, and Needs	3.5	4.0	.273
c. Hospital Functions and Organization	3.8	4.6	.035*
d. Non-hospital Components of the Health Care System	3.6	4.0	.137
e. Health Systems Analysis Techniques	4.1	4.2	.636
Information Systems	3.7	4.3	.089
Probability and Statistics	3.2	3.5	.264
Psychology and Sociology	3.0	4.0	.013*
<u>Managerial Problems</u>			
Improving Work Methods	3.4	4.5	.012*
Management of Information	3.7	4.2	.211
Job Analysis and Evaluation	3.1	4.3	.023*
Employee Motivation and Compensation	2.9	3.8	.041*
Anticipating Future Requirements	3.2	3.5	.343
Inventory Management and Control	3.9	3.4	.466
Facilities Design and Space Utilization	3.4	3.7	.512

Table 19--Continued

Item	Mean Score		p Value
	Preparation	Utility	
Costing and Economic Evaluation	3.3	3.8	.052
Resource Allocation	3.1	3.5	.269
Staffing and Scheduling	3.5	4.8	.008*
Personnel Administration	2.6	3.9	.060
Planning Health Facilities	3.3	3.7	.397
Financial Management and Control	2.9	3.8	.054
Project Management	3.7	4.1	.373
Cost Containment	3.5	4.3	.054
Compliance with Regulatory Requirements	2.8	3.3	.217

*Significant ($p \leq .05$).

Section GIMP. As shown in Table 18, all of the items in this section have a mean score ≥ 3.5 . Respondents felt that the need for health systems practitioners was high (4.5), and that the demand for them within the next five years would increase a significant amount (4.3). The academic attributes of the HS graduate under consideration (item GIMP-4) were generally what the supervisor expected, as represented by a mean score of 3.9 for this item. In regard to hiring another graduate of the Program (item GIMP-5), the mean score was 3.9, a certainly favorable response.

Additional Analyses on Group B Responses. As shown in Table 20, a comparison of P and U aggregate mean scores for selected categorical variables (JPREP vs. JPERF, SPREP vs. SUTIL, and MPREP vs. MUTIL) showed statistically significant different responses for both of the curricula-related variables. In both cases, the U score was higher than the P score, which is indicative that additional coverage in those areas is warranted, in the opinion of Group B respondents.

Table 20
Group B: Comparison of Selected
Categorical Variables

Variable	Mean Score	p Value
(a) JPREP	3.4	.367
(b) JPERF	3.6	
(a) SPREP	3.2	.001**
(b) SUTIL	3.8	
(a) MPREP	2.5	.010*
(b) MUTIL	3.6	

*Significant ($p \leq .05$).

**Highly significant ($p \leq .001$).

Questionnaire C

BIO Section. From responses to "Present Occupational or Educational Status," Group C respondents were categorized as shown in Table 21. Two graduates of the Program were pursuing additional degrees in another Georgia Tech department--Industrial and Systems Engineering. One had recently taken a position with a Health Systems Agency. Another had continued work after graduation with a current employer, but was enrolled in the MSHS Program as a part-time student and intended to work in the health systems field in the future. Two alumni had obtained graduate degrees from another institution, but were unemployed at the time the questionnaire was administered.

Table 21
Status of Group C Respondents

Status	Number
Medical Student	3
Georgia Tech Student	2
Health Planner	1
Other Employment (Part-time MSHS Student)	1
Unemployed	2

In response to a question concerning working in the health systems field in the future, three answered "Yes," two answered "No," and four were "Uncertain." Those answering "No" were the alumni who were unemployed. Those expressing uncertainty were the two Georgia Tech students and two medical students. (The third medical student answered "Yes," indicating perhaps that he/she may have interpreted the question differently from the other two medical students, assuming that this respondent intended to go into medical practice and considered this to be in the "health systems" field.)

Section C. Table 22 shows the distribution of responses to items in this section, which addresses the amount of preparation the respondents indicated they had received in the Subject Areas, Techniques, and Managerial Problems listed in Questionnaire C. Fifty-five percent of the items in these three areas have mean scores ≥ 3.0 , indicating a majority of favorable responses. This percentage is somewhat lower than that for Group A but is nevertheless on the "positive" side. Aggregate P mean scores for curricula-related categorical variables are shown in Table 23.

Suggestions for inclusion in the HS curricula came from four Group C respondents, and included statistics, more emphasis on techniques, less emphasis on interhospital problems, and more practical experience (e.g., externships and field training experiences).

Section GIMP. As shown in Table 22, the mean scores for the three items in this section were all > 3.0 , although there were more Group C respondents who responded negatively (i.e., < 3.0) to being satisfied with their education than there were Group A respondents. This is somewhat expected, since the two unemployed Group C respondents rarely responded to any item or section positively, thereby tending to lower mean scores.

Interestingly, although Group C respondents were those not meeting the desired employment criteria, the need for health systems practitioners was rated high, with a mean of 4.0.

Section WDWGW. The three items in this section of Questionnaire C addressed (1) reasons for not being employed in the health systems field, (2) factors associated with that decision, and (3) whether or not the respondents' health systems education had helped them in any way in their present situations.

Table 22
Group C: Response Distribution
for Individual Items

Item	Responses					Number Responding	Mean	Standard Deviation
	1	2	3	4	5			
Section C								
1		4	3	1	1	9	2.9	1.1
3		3	4	1	1	9	3.0	1.0
5		1	1	3	4	9	4.1	1.1
7		1	2	4	2	9	3.8	1.0
9		2	2	3	2	9	3.6	1.1
11	1	3	3	1	1	9	2.8	1.2
13		3	3	2	1	9	3.1	1.1
15	1	1	3	3	1	9	3.2	1.2
17		2	2	2	3	9	3.7	1.2
19		3	2	2	2	9	3.3	1.2
21		1	3	3	2	9	3.7	1.0
23		2	3	3	1	9	3.3	1.0
25	1	4	1	2	1	9	2.8	1.3
27		4	4		1	9	2.8	1.0
29	1	2	3	3		9	2.9	1.1
31	1	3	2	2	1	9	2.9	1.3
33	1	3		3	2	9	3.2	1.5
35	1	4	1	2	1	9	2.8	1.3
37	3	3	1	1	1	9	2.3	1.4
39		4	2	2	1	9	3.0	1.1
41		5		2	2	9	3.1	1.4
43		4	1	2	2	9	3.2	1.3
45		3	1	3	2	9	3.4	1.2
47		4		3	2	9	3.3	1.3
49		3	1	5		9	3.2	1.0
51		3		5	1	9	3.4	1.1
53	1	2	2	2	2	9	3.2	1.4
55	1	3	2	3		9	2.8	1.1
57	1	3	1	2	2	9	3.1	1.5
59	1	3	2	1	2	9	3.0	1.4
61	2	5	1		1	9	2.2	1.2
63	2	5	1		1	9	2.2	1.2
65	3	1	3	1	1	9	2.6	1.4
67	1	3	2	1	2	9	3.0	1.4
69	3	3	1	1	1	9	2.3	1.4
71	1	3	2	3		9	2.8	1.1
73		4		3	2	9	3.3	1.3
75	1	2	2	2	2	9	3.2	1.4
77	1	4	2	1	1	9	2.7	1.2
79		2	2	4	1	9	3.4	1.0
81		2	1	3	3	9	3.8	1.2
83	2	2	1	2	1	8	2.8	1.5
85	2	2	3	1	1	9	2.7	1.3
87	3	2	3		1	9	2.3	1.3
89	1	2	1	4	1	9	3.2	1.3
91	1	2	2	3	1	9	3.1	1.3

Table 22--Continued

Item	Responses					Number Responding	Mean	Standard Deviation
	1	2	3	4	5			
93	2	3	2	1	1	9	2.6	1.3
95	2	1	3	2	1	9	2.9	1.4
97	1	2		3	3	9	3.6	1.5
99	3	1	3	1	1	9	2.6	1.4
101	1	1	4	2	1	9	3.1	1.2
103	2	2	4		1	9	2.6	1.2
105	2	3	3		1	9	2.4	1.2
107	1	3	4		1	9	2.7	1.1
109	2	4	2		1	9	2.3	1.2
Section GIMP								
1	1	3	1	2	2	9	3.1	1.5
2	1	2		2	4	9	3.7	1.6
3		2		3	4	9	4.0	1.2

As indicated previously, several Group C respondents (six) were pursuing additional education and one was presently employed in the health systems field. The respondents who were unemployed at the time the questionnaire was administered cited low pay and a lack of knowledge and marketable skills as reasons for not being employed in the health field.

Factors influencing respondents' decisions not to seek employment in the health systems field were a lack of technical explanation (offered by one respondent) and a general dislike of the Program with a corresponding negative attitude toward working in the health field (offered by the two unemployed Group C respondents).

Seven respondents stated that their education had helped them in their present situation. Comments reported from these seven respondents include the following:

1. "I feel competent in directing health related projects--a competence I think a medical doctor should have to appreciate his role in the society."
2. "Currently the insight into the other half of medicine helps in the way that seeing the whole picture helps in any educational experience. I can better appreciate the problems of patient costs, hospital costs, and administrative aspects of the health field environment."
3. "The systems approach or health systems approach also applies to other service-oriented delivery systems. Techniques learned

through my health systems education are extended to my present situation."

4. "It served as a useful orientation to the health field. It gives me a good perspective to look at health care as it relates to my future in clinical medicine."

Inter-Group Comparisons

As previously indicated, comparisons of selected categorical variables and individual items were conducted to determine significant differences in responses of Group A and Group B, and in those of Group A and Group C. As in previous cases, a t-test was conducted to determine the degree of significance in response differences.

Categorical Variables. Comparison of Group A and Group B responses, as represented by aggregate mean scores, for appropriate (see Table 23) categorical variables showed the responses to be statistically significant for only one variable. This variable is JPREP, which had a Group A mean score of 4.2 and a Group B response of 3.4, and a corresponding, highly significant p-value of 0.001. The supervisors' assessment of the alumni's job preparation (as measured by the items in each questionnaire) was obviously lower than that of the alumni, but was nevertheless favorable.

To what this difference can be attributed is not clear--perhaps immodesty on the part of the Group A respondents, perhaps a difference in opinion of what the respondents' jobs really require, or various other possibilities. The higher JPREP score given by the alumni was not unexpected, however, and it is rewarding to see the high degree of confidence exhibited in this regard, as well as in the other Preparation scores (which were also higher for Group A than for Group B).

A similar comparison of Group A and Group C responses to curricula-related variables (SPREP, TPREP, and MPREP) showed no statistically significant differences, although the mean scores for two of these variables were slightly lower for Group C than for Group A.

Curricula-Related Items. The results of comparing Group A and Group B responses to curricula-related items are shown in Tables 24 and 25. Table 24 also shows the results of comparing Group A and C responses to these items.

As shown, there were no statistically significant differences in Group A and Group B SPREP mean scores (Table 24). However, as indicated

Table 23
Comparison of Mean Scores for
Categorical Variables

Category	Mean Score		
	Group A	Group B	Group C
JPREP	4.2	3.4	Not Applicable
JPERF	3.8	3.6	Not Applicable
JSATIS	3.8	Not Applicable	Not Applicable
SPREP	3.6	3.2	3.3
SUTIL	3.6	3.8	Not Applicable
TPREP	3.1	Not Applicable	3.0
TUTIL	3.1	Not Applicable	Not Applicable
MPREP	2.9	2.5	2.9
MUTIL	3.7	3.6	Not Applicable
GIMP	3.7	Not Applicable	Not Applicable

by the difference in SUTIL scores (Table 25), it is apparent that "Psychology and Sociology" was felt to be much more useful in the employees' jobs by the supervisors (4.0) than by the Group A respondents (2.9).

For Group A and Group B MPREP responses, several statistically significant differences are shown (Table 24). Interestingly, the supervisor's (Group B) assessments of the extent of the graduate's educational preparation in the Managerial Problems were generally higher than those of the graduates themselves. While this state is

Table 24
Inter-Group Comparisons of Preparation
Responses to Curricula-Related Items

Item	Mean Score		p Value	Mean Score		p Value
	Group A	Group B		Group A	Group C	
<u>Subject Areas</u>						
Accounting	2.7	2.7	.882	2.7	2.9	.661
Economics	3.2	2.9	.372	3.2	3.0	.576
Health Systems						
a. General Orientation to the Health Field	4.4	3.9	.082	4.4	4.1	.420
b. Health Issues, Problems, and Needs	4.1	3.5	.068	4.1	3.8	.328
c. Hospital Functions and Organization	4.0	3.8	.672	4.0	3.6	.323
d. Nonhospital Components of the Health Care System	3.4	3.6	.588	3.4	2.8	.142
e. Health Systems Analysis Techniques	4.2	4.1	.600	4.2	3.1	.015*
Information Systems	3.1	3.7	.107	3.1	3.2	.711
Probability and Statistics	3.6	3.2	.157	3.6	3.7	.960
Psychology and Sociology	3.1	3.0	.672	3.1	3.3	.679
<u>Techniques</u>						
Computer Programming and Data Processing				3.1	3.7	.136
Engineering Economy and Economic Decision-Making				3.4	3.3	.948
Cost Accounting				2.7	2.8	.900

Table 24--Continued

Item	Mean Score		p Value	Mean Score		p Value
	Group A	Group B		Group A	Group C	
Health Facility Planning				2.9	2.8	.872
Facility Layout				3.5	2.9	.161
Materials Handling				2.4	2.9	.258
Mathematical Modeling				2.8	3.2	.402
Optimization Methods				2.9	2.8	.872
Forecasting				2.4	2.3	.861
Inventory Management and Control Techniques				3.2	3.0	.646
Job Analysis and Evaluation Techniques				2.9	3.1	.628
Manpower Scheduling				3.8	3.2	.211
Work Scheduling				3.8	3.4	.466
Methods Analysis and Work Simplification				4.4	3.3	.058
Time Study				4.0	3.2	.047*
Work Sampling				4.1	3.4	.119
Standard Data				3.4	3.2	.712
Predetermined Motion Times				3.1	2.8	.405
Descriptive Statistics				3.4	3.1	.688
Estimation and Hy- pothesis Testing				2.9	3.0	.788
Bivariate Analysis				2.2	2.2	.894
Multivariate Analysis				2.2	2.2	.894
Project Management Techniques				2.9	2.6	.519
Quality Control				2.9	3.0	.884
Simulation				2.1	2.3	.712

Table 24--Continued

Item	Mean Score		p Value	Mean Score		p Value
	Group A	Group B		Group A	Group C	
Queuing Theory				2.8	2.8	.988
Staffing				3.9	3.3	.197
Systems Analysis				3.9	3.2	.189
Decision Theory				2.8	2.7	.839
<u>Managerial Problems</u>						
Improving Work Methods	4.2	3.4	.036*	4.2	3.4	.063
Management of Information	3.4	3.7	.406	3.4	3.8	.423
Job Analysis and Evaluation	3.0	3.1	.806	3.0	2.8	.658
Employee Motivation and Compensation	2.3	2.9	.150	2.3	2.7	.455
Anticipating Future Requirements	2.8	3.2	.348	2.8	2.3	.316
Inventory Management and Control	3.0	3.9	.049*	3.0	3.2	.654
Facilities Design and Space Utilization	3.4	3.4	.975	3.4	3.1	.511
Costing and Economic Evaluation	2.4	3.3	.041*	2.4	2.6	.782
Resource Allocation	3.0	3.1	.815	3.0	2.9	.827
Staffing and Scheduling	4.0	3.5	.225	4.0	3.6	.425
Personnel Administration	1.9	2.6	.011*	1.9	2.6	.198
Planning Health Facilities	2.8	3.3	.283	2.8	3.1	.511
Financial Management and Control	2.4	2.9	.140	2.4	2.6	.650
Project Management	3.0	3.7	.120	3.0	2.4	.275
Cost Containment	2.9	3.5	.218	2.9	2.7	.619
Compliance with Regulatory Requirements	1.4	2.8	.001**	1.4	2.3	.039*

*Significant ($p \leq .05$).**Highly significant ($p \leq .001$).

Table 25
Comparison of Group A and Group B Utility
Responses to Curricula-Related Items

Item	Mean Score		p Value
	Group A	Group B	
<u>Subject Areas</u>			
Accounting	2.8	3.4	.178
Economics	2.4	2.6	.546
Health Systems			
a. General Orientation to the Health Field	4.2	4.5	.451
b. Health Issues, Problems, and Needs	3.8	4.0	.629
c. Hospital Functions and Organization	4.3	4.6	.227
d. Nonhospital Components of the Health Care System	3.1	3.8	.136
e. Health Systems Analysis Techniques	4.4	4.2	.603
Information Systems	4.1	4.2	.981
Probability and Statistics	3.9	3.5	.295
Psychology and Sociology	2.7	4.0	.001**
<u>Managerial Problems</u>			
Improving Work Methods	4.4	4.5	.692
Management of Information	4.3	4.2	.657
Job Analysis and Evaluation	3.6	3.9	.455
Employee Motivation and Compensation	3.4	3.4	.929
Anticipating Future Requirements	3.8	3.3	.291
Inventory Management and Control	3.6	3.4	.738

Table 25--Continued

Item	Mean Score		p Value
	Group A	Group B	
Facilities Design and Space Utilization	3.9	3.7	.801
Costing and Economic Evaluation	4.0	3.7	.447
Resource Allocation	3.9	3.6	.544
Staffing and Scheduling	4.4	4.7	.294
Personnel Administration	3.4	3.4	.899
Planning Health Facilities	3.3	3.5	.628
Financial Management and Control	3.5	3.8	.556
Project Management	3.5	4.0	.258
Cost Containment	3.9	4.2	.400
Compliance with Regulatory Requirements	3.2	3.2	.973

**Highly significant ($p \leq .001$).

perhaps more desirable than the opposite situation, the numerous "negative" (< 3.0) MPREP mean scores for Group A indicate that perhaps additional coverage of these items is warranted. This is further suggested by the generally higher Group A MUTIL scores for these items (Table 25), as previously stated in the discussion of Questionnaire A results.

In comparing Group A and Group C Preparation responses, only three individual item responses were statistically significant--a rather remarkable finding, considering that Group C respondents generally had no employment against which to measure their preparation in these items. The three items for which there were significant differences include one item from each of the three major curricula headings. As shown, Group A respondents felt better prepared than Group C in two of the three items. For the third, "Compliance with Regulatory Requirements," Group C felt better prepared, although the

mean score for each group was < 3.0 . As suggested by the higher Group A mean score for this item, one might not appreciate the extent of regulatory requirements until such arrangements are actually encountered in a working environment.

Selected Items. As previously indicated, several items from Questionnaire A and Questionnaire B address similar topics. Table 26 shows a comparison of Group A responses and Group B responses to these items.

As shown, Group B respondents felt that their work involved major policy decisions (as opposed to minor operational problems) to a greater degree than did the Group A respondents. The difference expressed here probably is the result of different perspectives on just what constitutes "major policy."

Comparison of responses to the other topics in Table 26 yielded no significant differences, with the alumni's and supervisors' responses to each of these being generally favorable. (The means < 3.0 for the first topic in Table 26 should not necessarily be interpreted as less than favorable, since it is not known to what extent the alumni's efforts were intended to reduce costs or increase revenues for their organizations.)

Table 26
Comparison of Group A and Group B Responses
to Selected JF and GIMP Items

Topic	Group A		Group B		p Value
	Item	Mean	Item	Mean	
Reduced Costs/Increased Revenue	JF-4	2.9	JF-8	2.6	.479
Increased Efficiency	JF-5	3.8	JF-9	3.2	.108
Cost-Benefit Position	JF-6	3.9	JF-12	4.0	.848
Major Policy Decisions vs. Minor Operational Problems	JF-13	3.5	JF-10	2.3	.017*
Need for HS Practitioners	GIMP-6	4.8	GIMP-1	4.5	.228
Demand for HS Practitioners	GIMP-7	4.1	GIMP-2	4.3	.681

*Significant ($p \leq .05$).

CONCLUDING EVALUATIVE REMARKS

As described in the preceding section, the overall response to the alumni and employer questionnaires was favorable, with each of the three population groups having a positive impression of the Program. Those alumni who were employed appeared to be performing their jobs well, both in their own opinion and in the opinion of their supervisors. Hence, based upon the results of the questionnaires, the HS curricula seem to be providing the necessary knowledge and skills to Program graduates. Many of the changes suggested by the questionnaire respondents have already been incorporated into the curricula, and it appears that Program endeavors are headed in an appropriate direction. In short, the Program in Health Systems curricula are "appropriate" and Program graduates have been "successful" in performing their jobs.

While the preceding statement is based primarily upon the results of the alumni and employer questionnaires, a similar statement can be made in regard to the success of the Program when it is viewed in the context of the project's objectives. To illustrate, the general and specific objectives of the project are listed below, with associated accomplishments briefly described.

GENERAL OBJECTIVE: The general objective of the project was to develop a viable, academically sound, socially relevant, educational program which would prepare students for professional careers in the analysis, design, and improvement of operational and managerial systems of health care delivery in hospitals and in other health service organizations, as a means of improving the health care delivery system.

RESULTS: Judging from all available indicators, this objective has been fully achieved. Indeed, project goals have been exceeded in a number of respects, including the development of a unique premedical option, the introduction of a health planning option, and the establishment of the nation's first School of Health Systems.

SPECIFIC OBJECTIVE #1: Establish an educational program at Georgia Tech for training students in the knowledge and skills necessary to analyze, design, and improve the systems for delivering health care, enabling the students, upon graduation, to perform as competent health systems practitioners.

RESULTS: The Program in Health Systems was established as an academic unit of the College of Engineering in anticipation of the activation of the training grant. Based upon both formal and informal feedback, graduates of the Program are currently performing as "competent" health systems practitioners in a variety of health-related organizations and institutions.

SPECIFIC OBJECTIVE #2: Design curricula appropriate to the new educational program for training health systems analysts at the bachelor's and master's levels.

RESULTS: The initial version of a B.S. curriculum in health systems was approved by the Institute Curriculum Committee and the Academic Senate in October 1972. The first HS major was admitted to the Program in November 1972, and the first HS course was offered Winter Quarter 1973. The B.S. curriculum has been refined, modified, and expanded to presently include three options: (1) basic health systems analysis, (2) health systems planning, and (3) premedical.

The MSHS curriculum was approved by the Institute Graduate Council and the Academic Senate in the Fall of 1974 and was officially authorized by the Regents of the University System of Georgia in March 1975. The first class of 13 graduate students began their program of study in the Fall Quarter 1975. The MSHS curriculum presently offers options in hospital management engineering and health systems planning.

SPECIFIC OBJECTIVE #3: Develop educational materials and methods of instruction suitable for imparting the desired technical knowledge and analytical skills to student health systems analysts at Georgia Tech, and, subsequently, at other colleges and universities.

RESULTS: As previously indicated, numerous educational materials have been developed in conjunction with the design of 39 HS courses since the beginning of this project. Course documentations and materials have been prepared for all of these courses.

SPECIFIC OBJECTIVE #4: Attract potential students to this new and unique educational program, educate and train them, and assist them, upon graduation, in being placed in systems analysis positions in hospitals and in other health service organizations.

RESULTS: From Winter Quarter 1973 through Spring 1977, a total of 267 persons have entered the Program as HS majors (222 undergraduates and 45 graduate students). Forty-seven of these have graduated with B.S. degrees and 13 with MSHS degrees. As of June 1977, 37 of these were placed in positions with health care institutions, hospital associations, consulting firms, and government agencies; 12 went on to graduate schools; and 11 were considering offers from health-related organizations or were employed in other fields. Most of these graduates received more than one offer of employment, and employment opportunities for future graduates appear to be excellent.

SPECIFIC OBJECTIVE #5: Disseminate information on experiences gained in the developmental project, and distribute educational materials to other health systems centers and other academic institutions that are interested in establishing similar training programs.

RESULTS: Four comprehensive reports, including this one, describing project activities have been prepared and distributed to numerous individuals and organizations. Program activities have also been publicized through the distribution of materials to individuals on an extensive mailing list, through NAC meetings, and by way of the graduates themselves. These and other activities aimed at disseminating project results will continue throughout the duration of the supplemental training grant "Health Systems Planning Option." In addition, it is anticipated that several articles describing various project activities will be published in the literature.

The academic program initiated as a result of this five-year training project continues to flourish. As evidenced by the Program's recent designation as the School of Health Systems, recognition of and support for the educational program have reached auspicious levels, and the future of this new School looks bright.

APPENDICES

Appendix 1: Resumes of New Staff Members

Included in this appendix are the resumes of new staff members not previously forwarded to the Bureau of Health Manpower. It should be noted that Dr. Jack LaPatra joined the staff only recently (15 June 1977), thereby limiting his input into this project. Because of his expected involvement in future training activities, however, his resume is included. (Dr. LaPatra is presently serving as the project manager of the supplemental training project, "Health Systems Planning Option.")

NAMEOFFICIAL TITLE

LaPatra, Jack W.

Professor

ORGANIZATION

School of Health Systems
 Health Systems Research Center
 Georgia Institute of Technology

EDUCATION

<u>Institution</u>	<u>Major</u>	<u>Degree</u>	<u>Date</u>
University of Iowa	Systems Analysis	Ph.D.	1963
University of Iowa	Electrical Engineering	M.S.	1956
Clarkson College	Electrical Engineering	B.E.E.	1955

EXPERIENCE

- Professor, School of Health Systems, Health Systems Research Center, Georgia Institute of Technology, 1977-Present.
- Associate Professor of Electrical Engineering, Department of Electrical Engineering, University of California, Davis, 1963-1977.
- Associate Professor of Community Health, School of Medicine, University of California, Davis, 1970-1977.
- Ford Foundation Grant (completed Ph.D. dissertation), University of Iowa, 1962-1963.
- Assistant Professor of Electrical Engineering, University of the Pacific, 1961-1962.
- Instructor of Electrical Engineering, Naval Postgraduate School, 1958-1961.
- Associate in Electrical Engineering, University of California, Berkeley, 1957-1958.
- Design Engineer, Westinghouse, Pittsburgh, Pennsylvania, 1956-1957.

HONORS AND AWARDS

- Eta Kappa Nu, Honorary Electrical Engineering Fraternity, 1956.

- Ford Foundation Grant for Engineering Teachers, 1962-1963.
- University of California Faculty Fellowship, 1965.
- National Science Foundation Research Initiation Grant, 1965-1966.
- NASA-ASEE Summer Faculty Fellowships, 1968 and 1970.
- University of California Innovative Projects in Instruction Grant, 1968-1969.
- National Institute of Health Special Research Fellowship, spent at Department of Industrial Engineering and Operations Research, University of California, Berkeley, 1969-1970.
- Visiting Associate Professor, Graduate School of Administration, University of California, Riverside, 1975-1976.

PUBLICATIONS/PRESENTATIONS

Books

- Applying the Systems Approach to Urban Development, Dowden, Hutchinson, and Ross, 1973.
- Health Care Delivery Systems: Evaluation Criteria, Charles C Thomas, 1975.
- Public Welfare Systems, Charles C Thomas, 1975.
- Principles of Circuit Synthesis and Design (with G. Temes), McGraw-Hill Book Co., 1977.
- Healing: The Coming Revolution in Holistic Medicine, San Francisco Book Co., 1977.
- Analyzing the Criminal Justice System, Lexington Books, Expected in 1978.

Professional Articles

- "Time Domain Synthesis of One Port Networks," Electronic Design, March 29, 1962.
- "Geothermal Power Plants," Research and Development, September 1962.
- "Circuit Realizability Criteria," Electronic Industries, April 1963.
- "Applying Systems Theory in the Social Sciences," Engineering Education, April 1970, pp. 829-831.
- "Educating Engineers for Social Problem Solving," IEEE Transactions on Education, May 1971.

Laboratory Reports

- "Synthesis of Wave-Forming Networks," University of California Radiation Lab Research Series, 6529, August 3, 1961.
- "Signal Processing for Active Sonar," TM-714, U. S. Navy Electronics Lab.
- "Moonlab," Co-editor (with R. Wilson) of NASA Report NSR 05-020-151, and author of Chapter 6, "Personnel," Ames Research Center, 1968.
- "Air Improvement Recommendations for the SF Bay Area," NASA Report NGR 05-020-409, Stanford University, 1970.

Talks

- "System Approach to Community Problems," Invited Speaker, Third Annual Engineering Conference, Sacramento Section of IEEE, February 15, 1969.
- "Social Processes, Systems Science, and Human Values," Invited Speaker, 1969 IEEE Systems Science and Cybernetics Conference, Philadelphia, Pennsylvania, October 22, 1969.
- "Engineers' Potential for Social Problem Solving," Invited Speaker, First Annual Engineering Symposium, Chico State College, February 27, 1971.

Research Papers

- "Topological Formulations for a Complete Graph," Proceedings of the 6th Midwest Symposium on Circuit Theory, May 7, 1963, pp. cc1-cc11.
- "Path Formulation for Linear Graphs," Proceedings of the National Electronics Conference, Vol. 19, October 30, 1963, pp. 115-122.
- "Algorithms for Circuit Enumeration," (with B. R. Myers) IEEE International Convention Record, Part 1, 1964.
- "Canonical Block Diagrams," IEEE Region 6 Annual Conference, April 29, 1964, Salt Lake City, Utah.
- "Generation of the Topologically Distinct Types of Trees," (with B. R. Myers) Proceedings of the 8th Midwest Symposium on Circuit Theory, June 14, 1965, pp. 11.1-11.12.
- "Topologically Distinct Subnets in a Complex Network," (with H. Jensen) Proceedings of the 1965 Allerton Conference on Circuit and System Theory, pp. 868-878.
- "Radiation Measurement Utilizing Communication Theory," (with E. J. Wesley) IEEE Transactions on Nuclear Science, February 1966, pp. 276-280.

- "Derivation of a Tree Enumeration Lemma," (with B. R. Myers) Electronic Letters, Institution of Electrical Engineers, Vol. 2, No. 12, p. 452, December 1966.
- "Polynomial Decomposition for Topological Synthesis," (with K. D. Willis) Proceedings of the 1967 Princeton Conference on Information Sciences and Systems, pp. 211-215.
- "Linear Graph Realization," (with K. D. Willis) Proceedings of the 1967 Princeton Conference on Information Sciences and Systems, p. 216.
- "Graph Realization Utilizing Tree, Path, and Circuit Lists," (with K. D. Willis) Proceedings of the 1967 Allerton Conference on Circuit and System Theory.
- "Analyzing Graphs for Tree, Path, and Circuit Lists," (with K. D. Willis) Proceedings of the First Asilomar Conference on Circuits and Systems, November 2, 1967.
- "Parameter Identification in Social Systems," (with D. D. Cooksey) Proceedings of the 1969 Princeton Conference on Information Sciences and Systems.
- "Clique Synthesis in the Social System Module," Proceedings of the 1969 Princeton Conference on Information Sciences and Systems.
- "A Systems Approach to Modeling the Man-Man Interaction," (with D. D. Cooksey, D. Horgan) Proceedings of the Third Asilomar Conference on Circuits and Systems, December 10, 1969.
- "Synthesis of Specified Group Communication Patterns," Proceedings of the 1970 Systems Science and Cybernetics Conference.
- "Analysis and Synthesis of the Group Matrix," Proceedings of the Fourth Asilomar Conference on Circuits and Systems, November 20, 1970.
- "The Characterization of Influence in Social Processes," Proceedings of the 1971 IEEE Region 6 Conference, May 11, 1971.
- "Evaluation Criteria for Health Delivery Systems," Proceedings of the 24th Annual Conference on Engineering in Medicine and Biology, November 3, 1971, Las Vegas, Nevada.
- "Design of Social Systems with Multi-Level Communication Patterns," Proceedings of the Fifth Hawaii International Conference on System Sciences, January 12, 1972.
- "A Multi-Model of Alcoholism," Proceedings of the Sixth Hawaii International Conference on Systems Sciences, January 11, 1973.
- "A Quantification of Emotional States," Proceedings of the Sixth Hawaii International Conferences on System Sciences, January 11, 1973.

NAMEOFFICIAL TITLE

Goodman, Clifford S.

Research Associate

EDUCATION

INSTITUTION	MAJOR	DEGREE	DATE
Cornell University Ithaca, New York	Psychology	B.A.	1974
Georgia Institute of Technology	Health Systems	MSHS	1976
Georgia Institute of Technology, and Applied Statistical Training Institute	Cardio-Pulmonary Resuscitation Cost-Benefit Analysis Health Status Indexes Techniques for Evaluating Health Programs Information Methods for Health Planning	Special Courses	1976

EXPERIENCE

- Research Associate, Health Systems Research Center, and Seminar Program Coordinator, Program in Health Systems, Georgia Institute of Technology, September, 1976-present.
- Graduate Research Assistant, Health Systems Research Center, Georgia Institute of Technology, 1975-76.
- Business Manager, Covitt Salvage Co., Cleveland, Ohio, 1975.
- Miscellaneous part-time and temporary positions: Field Manager, Finger Lakes Flood Relief Project; Crisis Counselor, Open House Crisis Center.

PROFESSIONAL AFFILIATIONS AND SOCIETIES

- American Public Health Association
- American Association of Comprehensive Health Planning
- Association of University Program in Health Administration
- Hospital Management Systems Society

- "Health Systems Planning Option," Progress Report for Year 01, Bureau of Health Manpower, HEW, March, 1977.
- "How Healthy is Georgia?," presented to Atlanta 2000 Symposium for Georgia High School Students, Atlanta, March, 1977.
- "A Secondary Analysis of a Systems Approach to the Planning of a Hospital Outpatient Clinic," presented to Georgia Tech's "Introduction to Socioeconomic Systems Analysis" class, Atlanta, September, 1976, and January, 1977.

PROPOSALS/RESEARCH PROJECTS

- "Health Systems Planning Option," Special Training Project, Bureau of Health Manpower, HEW, 1976-77.
- "Nurse-Patient Interaction Impact on WIC Utilization," Health Systems Research Center, submitted to NCHSR, June, 1977.
- "Development of a Statewide Methodology for Determination of Needed Future Inpatient Service Capacity," Health Systems Research Center, submitted to Region IV Health Planning/Development Center, May, 1977.
- "Effects of Provider Behavior on Consumer Utilization," Health Systems Research Center, submitted to NCHSR, June, 1976.

FIELD TRAINING RESEARCH PROJECTS (unpublished manuscripts)

- Hematocrit as an Indicator of Iron Deficiency in a Supplementary Food Program, Program in Health Systems, Georgia Institute of Technology, September, 1976.
- Social Factors and Operations Research in Health Care Delivery, Program in Health Systems, Georgia Institute of Technology, June, 1976.
- A Secondary Analysis of a Systems Approach to the Planning of a Hospital Outpatient Clinic, Program in Health Systems, Georgia Institute of Technology, March, 1976.

Appendix 2: Guest Lecturers and
Speakers (1976-77)

<u>Speaker and Organization</u>	<u>Topic</u>
<u>Summer Quarter 1976</u>	
<u>HS 3021</u>	
Mr. Michael Lanzilotta DHEW Region IV Office Atlanta, Georgia	"Federal Role in Planning HMOs"
Mr. Wayne Stephens Project Director Decatur Church of Christ Senior Housing HMO Atlanta, Georgia	"HMO Planning Grants"
<u>HS 4692-3, 8093</u>	
Delutha King, Jr., M. D. (Practicing Urologist) Provider Member North Central Georgia Health Systems Agency Atlanta, Georgia	"Medical Services for and by Minorities"
Mr. David R. Shaw Director, Systems Develop- ment Department University of Alabama Hospitals and Clinics Birmingham, Alabama	"Management Engineering Projects in a Teaching Hospital"
Mr. P. Kenneth Whiteside Director Veterans Administration Hospital Atlanta, Georgia	"Systems Improvement Programs of Veterans Hospitals"
Susan Baxter, Roger Cochran, Cliff Goodman, and Bob Steffel (Graduate Students) Program in Health Systems Georgia Institute of Technology Atlanta, Georgia	Progress Reports on Field Training Projects
Matthew McNulty, Jr., Sc.D. Chancellor, The Medical Center Georgetown University Washington, D. C.	"Future Challenges and Opportunities for Health Systems Specialists"

Speaker and OrganizationTopic

Dawn Carrico, Don Galimore,
Robert Hagan, and Jim Tindall
(Graduate Students)
Program in Health Systems
Georgia Institute of
Technology
Atlanta, Georgia

Progress Reports on Field Training
Projects

John A. Wilhelm, M. D.
Director, Student Health
Service
Georgia Institute of
Technology
Atlanta, Georgia

"Management Problems in Providing
Student Health Services"

F. Levering Neely, M. D.
(Practicing Internist)
Adjunct Faculty
Program in Health Systems
Georgia Institute of
Technology
Atlanta, Georgia

"How Does a Practicing Physician
Spend His Time?"

Mr. Roane Beard
Director, Alumni Affairs
Georgia Institute of
Technology
Atlanta, Georgia

"The Georgia Tech National
Alumni Association"

Dr. John R. Freeman
Vice President
The Medicus Corporation
Atlanta, Georgia

"Computerized Medical Information
Systems--A Demonstration"

Fall Quarter 1976HS 4021

Ms. Catherine Youngblood
Public Health Nurse
Kirkwood Community Health
Center
Atlanta, Georgia

"Health Care Access for Kirkwood
Residents"

Mr. Sandy Jones
Planner
DeKalb County Health
Department
Decatur, Georgia

"Planning a Metropolitan Health
and Social Services Center"

Speaker and OrganizationTopicHS 6001

Mr. Ted Griffith
Office of State Coordination
HEW Region IV Office
Atlanta, Georgia

"U. S. Public Health Service
Activities"

HS 6351

Mr. Roger Cochran
Research Associate
Health Systems Research
Center
Georgia Institute of
Technology
Atlanta, Georgia

"Computer Center Resources"

Mr. Clifford S. Goodman
Research Associate
Health Systems Research
Center
Georgia Institute of
Technology
Atlanta, Georgia

"Review of Health Systems
Research Reports"

Winter Quarter 1977HS 3351

Dr. Justin Myrick
Assistant Professor
Health Systems Research
Center
Georgia Institute of
Technology
Atlanta, Georgia

"Computer Center Resources"

HS 4693, 8092-3

Mr. Adam Jablonowski
Assistant Executive Director
Medical Association of Georgia
Atlanta, Georgia

"Organized Medicine's Stand on
the New Health Planning Legislation"

Mr. Don Trantow
Executive Director
Health Systems Agency of
Central Georgia
Warner Robins, Georgia

"Qualifications and Responsibilities
of HSA Planners"

Speaker and OrganizationTopic

Dr. Edward Ostrander
Associate Professor
Department of Design and
Environmental Analysis
Cornell University
Ithaca, New York

"Creating Environments for Special
Health Care Needs"

Mr. Charles W. Garrett
Deputy Director
Maryland Institute for
Emergency Medicine
Baltimore, Maryland

"How Effective Is Crisis Medical
Care Today?"

Dr. Robert B. Fetter
Professor and Chairman
School of Organization
and Management
Yale University
New Haven, Connecticut

"Cost Control and Quality Assurance
in the Hospital"

Mr. Jack Coker
President
Coker and Associates
Atlanta, Georgia

"Health Systems Headhunting"

Dr. Lester Goodman
Director
Circulatory Systems R&D
Medtronic, Incorporated
Minneapolis, Minnesota

"Biomedical Engineering Today--
Need for Assessment"

James L. Craig, M. D.
Vice President and
Corporate Medical
Director
General Mills, Incorporated
Minneapolis, Minnesota

"Mobile Medical Services: The
Tennessee Valley Authority Experience"

Edward J. Hinman, M. D.
Assistant Surgeon General
Director, Division of
Hospitals and Clinics
Department of HEW
Washington, D. C.

"Management of Technology in
Community Hospitals"

Mr. Ed D. Anderson
Director for Consultation
Region IV Health Planning/
Development Center
Atlanta, Georgia

"P.L. 93-641--Status Report and a
Look to the Future"

Speaker and OrganizationTopicHS 6332

Dr. Steven Collier
Southern Regional Educational
Board
Atlanta, Georgia

"Planning, Systems, and the
Political Realities of Health
Care Decision-Making"

Mr. Allen Wells
HEW Region IV Office
Atlanta, Georgia

"Medicaid: Alternatives to
Hospitals and Convalescent
Homes"

Spring Quarter 1977HS 3021

Mr. Nate Kaufman
Health Planner
Health Planning and Develop-
ment Council for Broward
County (HSA)
Ft. Lauderdale, Florida

"Politics and Health Planning"

HS 6341

Mr. Robert Davis, Director
Ms. Courtenay Culp, Professional
Associate
Recruitment, Employment, and
Referral Service
American Association of Compre-
hensive Health Planning
Alexandria, Virginia

"Opportunities in Health Planning"

Appendix 3: National Advisory Committee for
the Program in Health Systems (1976-77)

- | | |
|--|--|
| <p>* Dr. Richard P. Covert
Center for Hospital Management Engineering
Division of Management Effectiveness, AHA
840 North Lake Shore Drive
Chicago, Illinois 60611
(312) 645-9581</p> | <p>* Dr. Richard P. LeMay
Associate Dean
School of Management
Rensselaer Polytechnic Institute
Troy, New York 12180
(518) 270-6585</p> |
| <p>* Mr. William T. Delamar
Assistant General Director
Albert Einstein Medical Center
York and Tabor Roads
Philadelphia, Pennsylvania 19141
(215) 329-0700</p> | <p>David Littauer, M.D.
12610 Higa Place
Rancho Bernardo
San Diego, California 92128
(714) 487-7741</p> |
| <p>* Mr. George L. Deschambeau
Executive Director
Health Activities Management Program
P. O. Box 6417
Orlando, Florida 32803
(305) 841-8840</p> | <p>Dr. Matthew F. McNulty, Jr.
Chancellor
Georgetown University Medical Center
37th and O, N.W.
Washington, D.C. 20007
(202) 625-7006</p> |
| <p>* Dr. Jay Goldman, Chairman
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Department of Industrial Engineering
and Operations Research
Wayne State University
5050 Anthony Wayne Drive
Detroit, Michigan 48202
(313) 577-3856</p> | <hr/> <p>*Also on Committee on Academic Programs,
Hospital & Health Services Division,
American Institute of Industrial
Engineers.</p> |

Appendix 4: Project Tasks and Results

This appendix consists of a brief description of project tasks as conducted throughout the duration of the project. These tasks, as originally stated or as modified in subsequent progress reports, are listed below, with each task accompanied by a brief description of the status or result of that task. (Task numbers correspond to particular project periods: 0.1 through 0.7, to the six months preceding the official start of the project; 1.1 through 1.16, to Year 01; 2.1 through 2.11, to Year 02; 3.1 through 3.6, to Year 03; and 4.1 through 4.8, to Year 04.)

Preliminary Period

The following preliminary tasks were scheduled to be conducted during the period 7/1/72-12/31/72. They are shown as stated in the original project application.

<u>Number</u>	<u>Task</u>	<u>Status or Result</u>
0.1	Obtain final administrative and faculty approvals at Georgia Tech for the new undergraduate courses and the B.S. curriculum.	Completed 10/31/72.
0.2	Complete arrangements for a continuation of the affiliation with the Medical College of Georgia (including its teaching hospital and clinics).	Completed 7/1/72, reconfirmed 7/1/73.
0.3	Complete arrangements with the School of Industrial and Systems Engineering at Georgia Tech for modifications in the existing "Program in Hospital and Medical Systems" to make it compatible with, and in support of, the proposed training project.	Completed 7/1/72, reconfirmed 7/1/73.
0.4	Make arrangements with the Georgia Tech schools and departments that will provide service courses for the initial undergraduate curriculum.	Completed 7/1/72.
0.5	Expand existing arrangements with the various cooperating academic and health institutions and agencies to include their roles in the proposed training project.	Basic arrangements completed 7/1/72, supplementary arrangements made periodically.
0.6	Develop a detailed syllabus, class notes, reference materials, handouts, and other teaching-learning materials for the new Sophomore-level orientation course, HS 201, "Introduction to the Health Field."	HS 201 preliminary plans completed 7/1/72, documentation completed 1/2/73.

<u>Number</u>	<u>Task</u>	<u>Status or Result</u>
0.7	Finalize faculty assignments to the other new health systems courses and other academic duties, in preparation for admitting the first group of students.	Course development assignments made 4/1/72, course assignments for Winter 1973 made 11/1/72.

Year 01

The following tasks are those that were pursued during the 01 Year. They are shown for the most part as stated in the original project application, but they have been renumbered to coincide with the 01 Year (1/1/73-6/30/74).

<u>Number</u>	<u>Task</u>	<u>Status or Result</u>
1.1	Develop an experimental design and data collection system for capturing and analyzing information on the training project that will be needed in the project evaluation.	Design completed January 1974. Internal data collection and evaluation activities conducted throughout project duration.
1.2	Obtain final (a) administrative and (b) faculty approvals at Georgia Tech for the new graduate courses, MSHS curriculum, and B.S. options.	(a) Master of Science in Health Systems (MSHS) curriculum approved by Board of Regents March 1975. (b) Faculty approval of two HS graduate courses obtained March 1973, faculty approval of 11 additional HS courses October 1974, B.S. options informally offered to students in other Georgia Tech departments.
1.3	Make arrangements with--	
	1.31 Georgia Tech schools and departments that will provide service courses for the new graduate curriculum;	Completed September 1974. Renewed or revised periodically as required.

<u>Number</u>	<u>Task</u>	<u>Status or Result</u>
	1.32 Cooperating organizations to provide for preceptorships, externships, practicums, and other field work to be required of the first group of trainees during 1973-74; and	Initial sites selected January 1974; others arranged as needed. (For complete listing of field training sites and projects, see Appendix 7.)
	1.33 Emory, Georgia State, the Medical College, and other cooperating academic institutions so that trainees can include courses of these institutions in their programs of study.	Initial arrangements made in July 1972.
1.4	Develop academic materials--	
	1.41 Detailed syllabi and other teaching-learning materials for 7 new undergraduate courses (6 required and 1 elective); and	Completed course documentation for 7 HS courses (HS 2011, 3011, 3131, 3211, 3351, 3971-2-3, 4581) contained in Year 01 Progress Report.
	1.42 Manual on practicums and externships as detailed guidelines for field training.	Originally completed October 1973. Revised September 1976.
1.5	Develop plans and materials--	
	1.51 Recruiting plan, with publicity materials, for attracting high school seniors as majors in health systems, in preparation for admitting the first Freshman Class in 1973; and	Recruiting Plan completed September 1974.
	1.52 Plans for placement assistance to trainees, in cooperation with the Georgia Tech Placement Center.	Formal listing of HS majors at Placement Center in January 1974; HSRC Employment Opportunities Service open to HS majors in March 1974.
1.6	Pursue and complete the 1972-73 academic work of the first group of trainees, including counseling of students, offering courses, and other faculty duties such as faculty and committee meetings; a first-year total of 10 Junior, 10 Sophomore,	Total of 32 HS majors on roster for September 1973, 24 active in Fall Quarter 1973.

<u>Number</u>	<u>Task</u>	<u>Status or Result</u>
	and 5 Freshman transfers, or 25 trainees, is projected.	
1.7	Develop the first Progress Report.	Completed December 1973.
1.8	Overall project direction and coordination.	Continued.
(1.9)	(Guide the continuing graduate work of MSIE and Ph.D. students who are PHMS trainees under the existing cooperative program with the School of Industrial and Systems Engineering. This is not a part of, but is important to the development of, the proposed training project.)	PHMS grant completed June 1972. Graduate student guidance continued as needed; PHMS extension listed in the Georgia Tech General Catalog and in HSRC bulletins.
1.10	Attract the first class of high school seniors as majors in Health Systems and the first group of B.S. option students.	First high school seniors admitted in Fall 1973, first students admitted on an informal option basis in Fall 1974.
1.11	Develop detailed teaching-learning materials for the one remaining undergraduate course, for 2 additional undergraduate electives, and for 9 graduate courses.	Materials for 4 undergraduate HS courses (HS 3021, 3121, 4141, 4861-2-3) completed April 1974. Graduate course development delayed.
1.12	Finalize plans and arrangements for suitable field training project topics for Senior students in 1973-74.	Sites and project topics for field training selected as needed. (See Appendix 7 for complete listing.)
1.13	Pursue and complete the 1973-74 academic work of all new and carryover trainees.	Total of 64 HS majors on roster in September 1974, 55 active in Fall Quarter 1974.
1.14	Questionnaires and correspondence regarding evaluation.	First National Advisory Committee (NAC) meeting held November 1973. Peer Professional Questionnaire developed June 1974.

<u>Number</u>	<u>Task</u>	<u>Status or Result</u>
1.15	Assist with the placement of trainees to graduate in 1973-74.	All 1973-74 graduates placed.
1.16	Provide overall project direction and coordination.	Continued.

Year 02

The activities shown below were pursued during the 02 Year (7/1/74-6/30/75). The numbering of these tasks corresponds to the 02 Year designations, and are basically the same as reported in the 03 Year Progress Report (as are the subsequently listed project tasks for Year 03 and Year 04).

<u>Number</u>	<u>Task</u>	<u>Status or Result</u>
2.1	Admit first MSHS students in Fall Quarter 1974.	MSHS degree approved by Board of Regents March 1975. First 13 graduate students matriculated Fall 1975.
2.2	Develop HS 3111, 3121, 4861-2-3 by 12/31/74.	Course documentation completed: HS 3021--9/74 HS 3111 and HS 3121--Subject material from HS 3111 incorporated in HS 3121, 8-74. HS 4141--4/75 HS 4861,2,3--4/75
2.3	Admit first option students in Architecture in Fall Quarter 1974.	Students from several departments admitted informally as "option" students in Fall 1975.
2.4	Develop 5 graduate courses by 9/1/74 and 4 more by 6/30/75.	Development of graduate courses delayed.
2.5	Expand field training arrangements for Seniors and graduate students during 1974-75.	Sites and project topics for field training selected as needed. (See Appendix 7.)
2.6	Administer the 1974-75 academic program.	Total of 83 HS majors on roster in May 1975; 70 active in Spring Quarter 1975.

<u>Number</u>	<u>Task</u>	<u>Status or Result</u>
2.7	Refine the placement assistance procedure.	Monitoring and improvement of placement activities carried out on a continuing basis.
2.8	Obtain evaluation data for 1974-75.	Second NAC meeting held November 1974. Peer Professional Evaluation Questionnaire administered in July 1974. Internal data collection continued.
2.9	Review and refine courses and curriculum.	1974-75 curriculum review and refinement completed in February 1975.
2.10	Develop the second Progress Report.	Completed in June 1975.
2.11	Provide project direction and coordination.	Continued.

Year 03

Year 03 (7/1/75-6/30/76) project tasks included those that follow:

<u>Number</u>	<u>Task</u>	<u>Status or Result</u>
3.1	Obtain evaluation data for 1975-76.	Internal evaluation activities completed.
3.2	Conduct interim evaluation.	Alumni/Employer Questionnaires administered in Year 04. Third NAC meeting held November 1975.
3.3	Administer the 1975-76 academic program.	Continued.
3.4	Review and refine courses and curricula.	Undergraduate Curricula I, II, and III. (See Appendix 6 for 1977-78 versions.) Approved by Curriculum Committee 2/13/76. Following courses were documented during Year 03:

<u>Number</u>	<u>Task</u>	<u>Status or Result</u>
		HS 4351--9/75
		HS 4692,3--9/75
		HS 6001--9/75
		HS 6351--9/75
		HS 6331--10/75
		HS 6332--10/75
		HS 8161,2,3--12/75
		HS 6341--2/76
		HS 3341--5/76
		HS 4021--5/76
		HS 4570--5/76
		HS 6570--5/76
		HS 6571,2,3--5/76
		HS 8092,3--5/76
		HS 3332--6/76
		HS 6231--6/76

3.5 Develop the third Progress Report. Completed in June 1976.

3.6 Provide project direction and coordination. Continued.

Year 04

Project tasks for Year 04 (7/1/76-6/30/77) included the following:

<u>Number</u>	<u>Task</u>	<u>Status or Result</u>
4.1	Administer the 1976-77 academic program.	Continued.
4.2	Complete the development of courses and curricula.	HS curricula and courses developed under this project are described in the Training Activities section. Courses developed in the 04 Year are as follows: HS 6340--3/77 HS 6333--6/77
4.3	Integrate all aspects of the training project.	Continuing.
4.4	Update evaluation data.	Fourth NAC meeting March 1977. Internal evaluation activities continued. Alumni/Employer Questionnaires administered 11/76.
4.5	Complete the final evaluation.	Completed June 1976.
4.6	Provide project direction and coordination.	Continued.

<u>Number</u>	<u>Task</u>	<u>Status or Result</u>
4.7	Make final arrangements with "officials" of the Georgia Institute of Technology for the continuation of the B.S. and MSHS curricula as permanent programs of instruction.	Approval for the School of Health Systems by the Board of Regents granted 5-10-77.
4.8	Prepare and submit the final report to the Bureau and publicize experiences, findings, conclusions, and recommendations through appropriate literature, information centers, and other media.	Final report completed September 1977. Dissemination of project experiences and results pursued through various media.

Appendix 5: Course Documentations for
Selected Health Systems Courses

GEORGIA INSTITUTE OF TECHNOLOGY
ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

(404) 894-4550

Revised
July, 1977

Course Documentation

Course Description:

H.S. 4021. Community Health Problems*
3-0-3. Prerequisite: Normally taken by seniors.

Problems of urban and rural communities and planning for health care needs, community structure and decision making, accessibility and acceptability, planner-community interactions within a systems context.

Textbook:

Readings for HS 4021, School of Health Systems, Georgia Institute of Technology, Atlanta, June, 1977, 206 pp.

Purposes and Objectives:

The purpose of this course is to give the student a comprehensive, in-depth background in health planning problems unique to urban and rural communities respectively and to introduce him to the techniques, methodologies, and decision-making processes essential to effective community health planning. The objectives are:

- (1) To acquaint the student with the various aspects of urban and rural health planning both from a historical context and from a current trend context including community structures, community pressures, legislative influences, types of unorthodox health delivery mechanisms, political-environmental concerns, and health care accessibility.
- (2) To provide the student with decision-making tools in dealing with community health problems.
- (3) To give an understanding of the role of the health planner in a community in both plan formulation and plan implementation.

Scope and Limitations:

The material covered in this course is concentrated on the community as a total system. Health care delivery is approached from a non-institutional standpoint.

Approach and Method of Instruction:

Because no suitable comprehensive texts are available, readings from the current literature have been compiled and reproduced for the convenience of the students. Other reading materials will be placed on reserve as applicable.

Course Documentation
H.S. 4021, 7/77
Page 2

Classroom presentations will be a combination of lecture-seminar format. Students will be actively involved through individual presentations, field trips and role-playing situations. As appropriate, various audio-visual aids will be used and guest speakers will be invited to address the class.

Bases for Grading:

See attached course outline for current quarter.

Course Outline:

See attached course outline for current quarter.

Faculty and Director Approval:

Director

7-22-77

Date

H.S. 4021

COURSE OUTLINE

____ Quarter 19 ____ Class Meeting Time ____

Instructor ____ Classroom ____

Office ____ Office Hours ____ Phone ____

Bases for Grading:	Mid-term Exam	25%
	Homework Assignments	15%
	Group Project & Report	30%
	Final Exam	<u>30%</u>
		100%

<u>Session Number</u>	<u>Date</u>	<u>Classroom Topics</u>	<u>Readings</u>
1		Introduction and overview	
2-5		<u>Unit I</u> Qualitative and quantitative conceptualizations of a "community"	Readings 1-5 Assignment 1
6-9		<u>Unit II</u> Community decision-making and health care problems	Readings 6-11
10-13		<u>Unit III</u> Accessibility to health services: spatial, social and economic	Readings 12-18 Assignment 2
14		Quiz	
15-17		<u>Unit IV</u> Urban communities: Impact on health and health delivery	Readings 19-20
18-20		<u>Unit V</u> Rural communities: Impact on health and health delivery	Readings 21-22
21-26		<u>Unit VI</u> Communities and the health planner: input in plan formulation and implementation, entry into the community, special problems in evaluation	Readings 23-24, 25-28 Assignment 3
27-30		<u>Unit VII</u> Community-oriented health delivery systems and proposals	Readings 29-31
		Review and course critique	
		FINAL EXAM	

READINGS FOR HS 4021

TABLE OF CONTENTS

<u>Reading Number</u>		<u>Page</u>
1.	Harmon, G.J. "Start Planning by Defining the Community, Its Future Needs." <u>Hospitals</u> , June 16, 1976, Vol. 50, pp. 105-112.	1
2.	Regeister, D.C. "Community Mental Health--For Whose Community?" <u>Amer. J. of Public Health</u> , September, 1974, Vol. 64, pp. 886-893.	5
3.	Titchener, James L., M.D. and Frederic T. Kapp, M.D. "Family and Character Change at Buffalo Creek." <u>American Journal of Psychiatry</u> , March 1976, pp. 295-299.	13
4.	Erikson, K. "Loss of Communalilty at Buffalo Creek." <u>Amer. J. of Psychiatry</u> , March, 1976, Vol. 133, pp. 302-305.	18
5.	Feingold, E. "A Political Scientist's View of the Neighborhood Health Center as a New Social Institution." In <u>Neighborhood Health Centers</u> , Hollister, Kramer and Bellin (eds.), Lexington, Mass.: D.C. Heath, 1974 pp. 91-98.	22
6.	Milio, N. "Decision-Making in the Health Care System." Resource Manual from the Inner City Work-Study Institute for Health Professions Faculty, Summer, 1975, pp. 160-167.	30
7.	Alinsky, S. "What is the Role of Community Organization in Bargaining with the Establishment for Health Care Services?" In <u>Medicine in the Ghetto</u> , J. Norman (ed.), New York: Appleton-Century-Crofts, 1969, pp. 291-299.	36
8.	Elling, R. and O. Lee. "Formal Connections of Community Leadership to the Health System." <u>Milbank Fund Quarterly</u> , July, 1966, Vol. 44, pp. 294-306.	43
9.	Freeman H. and C. Lambert. "The Influence of Community Groups on Health Matters." <u>Human Organization</u> , October, 1965, Vol. 4, pp. 353-357.	53
10.	Jonas, S. "Theoretical Approach to the Question of Community Control of Health Services Facilities." <u>Amer. J. Of Public Health</u> , Vol. 61, May, 1971, pp. 916-921.	58
11.	MacStravic, R. "Scalability of Community Participation in Health Program Decisions." <u>Health Services Research</u> , Spring, 1975, pp. 76-81.	64

HS 4021

<u>Reading Number</u>		<u>Page</u>
12.	Moore, W. <u>The Vertical Ghetto</u> . New York: Random House, 1969. Chapter VIII, "Say Ahhh," pp. 134-151.	70
13.	Meyer, L. "Apartment Clinics Keep Senior Citizens in the Community." <u>Hospitals</u> , July 1, 1976, Vol. 50, pp. 63-67	83
14.	Patterson, R. "Services for the Aged in Community Mental Health Centers." <u>Am. J. of Psychiatry</u> , March, 1976, Vol. 133, pp. 271-273	85
15.	Ostrander, E. "Architectural Barriers and the Voiceless Consumer." <u>Human Ecology Forum</u> , Vol. 2, Autumn, 1971	88
16.	Ostrander E. and Connell, B. "Designing for Users: A Contemporary Approach." <u>Cooperative Extension Newsletter</u> , New York State Extension Service, 1975	90
17.	Brooks, C.H. "Association Among Distance: Patient Satisfaction and Utilization of Two Types of Inner-City Clinics." <u>Medical Care</u> Vol. 11, Sept-Oct., 1973, pp. 373-383.	93
18.	Korsch, B. and Negrete, X. "Doctor-Patient Communication." <u>Scientific American</u> , Vol. 227, August 1972, pp. 66-74.	104
19.	Schorr, L. and English, J. "Background, Context and Significant Issues in Neighborhood Health Center Programs." In <u>Neighborhood Health Centers</u> , Hollister, Kramer and Bellin (eds.). Lexington, Mass.: D.C. Heath, 1974, pp. 45-50	112
20.	Wood, C., Volante, R., Peeples, S., Jackson, S., and Richter, E. "An Experiment to Reverse Health-Related Problems in Slum Housing Maintenance." <u>Amer. J. Public Health</u> , Vol. 64, May, 1974, pp. 474-476.	116
21.	Navarro, V. "The Political and Economic Determinants of Health and Health Care in Rural America." <u>Inquiry</u> , Vol. 13, June, 1976, pp. 111-121.	119
22.	Rudd, P. "The United Farm Workers Clinic in Delano, Calif.: A Study of the Rural Poor." <u>Rural Health</u> , July-August, 1975, Vol. 90, pp. 331-339.	130
23.	Geiger, H.J. "Community Control--or Community Conflict?" in <u>Neighborhood Health Centers</u> , Hollister, Kramer, Bellin (eds.), D.C. Heath, Lexington, Mass., 1974, pp. 133-142.	139

HS 4021

Reading
Number

Page

24.	Arnstein, S.H. "A Ladder of Citizen Participation." <u>J. Amer. Inst. of Planners</u> , July, 1969, pp. 216-224	147
25.	Burke, E. "Citizen Participation Strategies." <u>J. Amer. Inst. of Planners</u> , September, 1968, pp. 287-294.	156
26.	Partridge, K. and White, P. "Community and Professional Participation in Decision Making at a Health Center." <u>Health Services Reports</u> , Vol. 87, April 1972, pp. 336-342.	164
27.	Partridge, K. "Community and Professional Participation in Decision Making at a Health Center." <u>Health Services Reports</u> , Vol. 88, June-July, 1973, pp. 527-534	171
28.	Chamberlin, R. and Radebaugh, J. "Delivery of Primary Health Care--Union Style." <u>New England J. of Medicine</u> , Vol. 294, March 18, 1974, pp. 641-645.	179
29.	Sidel, V.W. "The Barefoot Doctors of the People's Republic of China." <u>New England Journal of Medicine</u> , Vol. 286, 1972, pp. 1292-1300.	184
30.	New, P. and New, M. "Health Care in the People's Republic of China: The Barefoot Doctor." <u>Inquiry</u> , Supplement to Vol. XII, June, 1975, pp. 103-112.	191
31.	Institute for Policy Studies, "Questions and Answers on a National Community Health Service." <u>Community Health Alternatives Project</u> , 1901 Que St. N.W., Washington, D.C. 20009.	202

GEORGIA INSTITUTE OF TECHNOLOGY
ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

(404) 894-4550

15 October 1976

Course Documentation

Course Description:

H.S. 6332. Health Systems Analysis II
3-0-3. Prerequisites: Econ. 6000, H.S. 6001 or equivalents.

Applications of economic analysis to resource allocation in health care delivery. Health care finance and factors involved in cost containment programs.*

Textbook:

Krizay, John and Andrew Wilson., The Patient as Consumer, Lexington Books, Lexington, Mass., 1974, 231 pp.

Collateral Readings (on reserve):

Arnold, Mary F., Vaughn Blankenship and John M. Hess, Eds., Administering Health Systems: Issues and Perspectives, Aldine-Atherton, Inc., Chicago, 1971.

Berki, Sylvester E., Hospital Economics, D.C. Heath, Lexington, Mass., 1972.

Fuchs, Victor R., Who Shall Live?, Basic Books, Inc., New York, 1974, 151 pp.

Sorkin, Alan L., Health Economics, D.C. Heath, Lexington, Mass., 1975.

Selected readings from the current literature.

Purposes and Objectives:

The purpose of this course is to apply microeconomics and macroeconomics to the health industry so as to demonstrate and explain the economic behavior of health care delivery systems. The objectives are as follows:

- (1) To provide a comprehensive description of the health industry as an economic institution and as an economic system.
- (2) To suggest explanations of the economic behavior of health systems, based upon classical, neoclassical, and other economic theories.

*1977-78 catalog

Course Documentation
H.S. 6332, 10/15/76
Page 2

- (3) To develop the student's understanding of the theory, principles, and practices of economics as applied to the health field.
- (4) To conceptualize the elements of economic theories that describe and explain both individual health care systems and the national health care system.
- (5) To develop the student's ability to analyze, design, and improve management systems by use of economic analysis.

Scope and Limitations:

This course is designed to be a critical evaluation of previous and current efforts to finance the health needs of the U.S. population. Similarities and differences between health care devices and traditional economic goods are stressed. The students are assumed to have a working knowledge of graduate level micro and macro economics.

Approach and Method of Instruction:

This course utilizes the lecture-recitation approach, combined with classroom and homework problems and assigned readings followed by classroom discussion. A term paper (10-15 double-spaced pages) on a topic of your choice is required. These papers are to be a literature review on a course topic approved by the instructor.

Other Information:

All assigned reading materials are due the day assigned. Students are presumed to have read the material carefully prior to attending class.

Bases for Grading:

The performance and achievement of each student will be assessed impartially, based upon all indicators available, including:

- | | |
|-----------------------------|-----|
| (1) Classroom participation | 20% |
| (2) Mid-term exam | 20% |
| (3) Final exam | 30% |
| (4) Term paper | 30% |

Course Outline:

(Attached)

Faculty and Director Approval: _____

Director

Date

11-24-76

GEORGIA INSTITUTE OF TECHNOLOGY
ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

(404) 894-4550

HS 6332 (INS 850)

COURSE OUTLINE

Winter Quarter 1976

Instructor: Dr. Caswell

Office: 818 Urban Life Bldg., Ga. State

Telephone: 658-2725

Class Meeting Time: T-Th 4:30 - 6:30

Classroom: Savant 12

Office Hours: Mon. through Fri. 8:30 - 4:30

<u>Session Number</u>	<u>Date</u>	<u>Classroom Topics</u>	<u>Preparation</u>
1		Introduction: The Relevance of Economic Analysis	Fuchs, Introduction, Chapter 1
2		Scope/size of the problem; the use of cost-benefit analysis	Articles 1, 2, 3 Sorkin, Chapter 6, pp. 101-118 Krizay and Wilson, Chapter 1
3		A definition of the health care system; assessment of utility functions	Fuchs, Chapter 2 Articles 4 and 5
4		Examination of the role of the physician as the mediating force	Fuchs, Chapter 3 Krizay and Wilson, Chapter 7
5		Patient generated vs. physician generated demand	Articles 6, 7, 8 Krizay and Wilson, Chapter 2 Sorkin, Chapter 2
6		Open (possible guest speaker)	
7		Exam	
8		The Economic Problem of Hospitals	Fuchs, Chapter 4 Berki, Chapter 1 Krizay and Wilson, Chapter 6
9		Measuring the hospital's objectives and output	Berki, Chapter 2 and Chapter 3

HS 6332 (INS 850)
Page 2

<u>Session Number</u>	<u>Date</u>	<u>Classroom Topics</u>	<u>Preparation</u>
10		Hospital output (continued)	Article 9
11		Hospital efficiency and market power	Berki, Chapter 4 Article 10
12		Private financing of health needs	Krizay and Wilson, Chapter 3 Fuchs, Chapter 6
13		Economics of the health insurance industry	Krizay and Wilson, Chapter 4 Article 11
14		Public financing of health needs	Krizay and Wilson, Chapter 5 Articles 12 and 13
15		Nonconventional health financing mechanisms	Krizay and Wilson, Chapter 8 and Chapter 9
16		Summary of requirements for health financing reform	Krizay and Wilson, Chapter 10 Fuchs, Conclusion Article 14
17		Simulation as a tool of economic analysis	Article 15
18		Simulation case study	Handout
19		Student Reports	
20		Student Reports; course critique	
		Final examination	(all previous)

HS 6332 (INS 850)
Page 3

List of Articles:

1. "The Sky's the Limit on Health Care Costs," Business Week, May 6, 1975.
2. "Still Waiting for that Revolutionary Health Plan," Business Week, January 13, 1975.
3. Bergwall, David F., Philip N. Reeves and Nina B. Woodside, "Cost-Benefit Analysis: A Method for Evaluating Alternatives," in Introduction to Health Planning, Information Resources Press, Washington, D. C., 1974.
4. Arnold, Mary F., "A Social Systems View of Health Action," in Arnold, M. F., L. V. Blankenship and J. M. Hess, eds., Administering Health Systems, Aldine-Atherton, Inc., Chicago, Ill., 1971.
5. Stinson, David H., "Utility Measurement in Public Health Decision Making," Reisman, Arnold and Marylou Kiley, eds., Health Care Delivery Planning, Gordon and Breach, New York, 1973.
6. Arrow, Kenneth, "Uncertainty and the Welfare Economics of Medical Care," American Economic Review, 53, #5, December 1963.
7. Garfield, Sidney, "The Delivery of Medical Care," Scientific American, 222, #4, April 1970.
8. Fuchs, Victor R., Elizabeth Rand and Bonnie Garrett, "The Distribution of Earnings in Health and Other Industries," Journal of Human Resources, 5, #3, Summer 1970.
9. Kisch, Arnold I. and Paul R. Torrens, "Health Status Assessment in the Health Insurance Study," Inquiry, XI, March 1974.
10. Link, Charles R. and John H. Landon, "Monopsony and Union Power in the Market for Nurses," Southern Economic Journal, 41, #4, April 1975.
11. Sgontz, Larry G., "The Economics of Financing Medical Care: A Review of the Literature," Inquiry, IX, December 1972.
12. Whipple, David, "Communication: Health Care as a Right: Its Economic Implication," Inquiry, XI, March 1974.
13. Orr, Larry L., "The Health Insurance Study: Experimentation and Health Financing Policy," Inquiry, XI, March 1974.
14. Mitchell, Bridger M. and Ronald J. Vogel, "Health and Taxes: An Assessment of the Medical Deduction," Southern Economic Journal, 41, #4, April 1975.
15. Kennedy, Frederic D., "Development of a Community Health Service System Simulation Model," in Reisman and Kiley, op. cit.

GEORGIA INSTITUTE OF TECHNOLOGY
ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

(404) 894-4550

2 March 1977

Course Documentation

Course Description:

H.S. 6340. Health Planning Techniques
3-0-3. Prerequisites: H.S. 6001, ISyE 6739

Methods of group-consensus formation, goal-setting, health needs assessment and program evaluation. Coverage includes Delphi and nominal group processes, patient-origin studies, accessibility analysis and decision procedures.*

Textbook:

A collection of readings from the current literature is available to each student (See attached for most current list).

Supplementary Texts:

Griffith, John R., Quantitative Techniques for Hospital Planning and Control, Lexington Books, Lexington, Mass., 1972, 403 pp.

LaPatra, J.W., Health Care Delivery Systems, C. Thomas Books, Springfield, Ill., 1975, 358 pp.

Nie, Norman H. et al, SPSS--Statistical Package for the Social Sciences, 2nd Edition, McGraw-Hill Book Co., New York, 675 pp.

Purposes and Objectives:

This course is designed for students intending to work as practitioners in health planning. Its purpose is to provide hands-on experience using selected methodologies and techniques employed by health planning practitioners. The course uses the systems planning paradigm (problem formulation, goal-objective-setting, evaluation, decision-making, implementation, re-examination) as a framework for discussing and experimenting with appropriate tools and techniques such as Delphi and Nominal Group Processes, health status index synthesis application of factor analysis to needs assessment, patient origin and accessibility analysis. The general approach of this course is intended to complement that of H.S. 6341. A working knowledge of statistical methods and a general familiarity of the health care delivery system are prerequisites.

It is intended that, upon successful completion of this course, participants will be able to:

- (1) Specify goals and objectives in quantitative terms.

Course Documentation
H.S. 6340, 3/2/77
Page 2

- (2) Use group consensus and information gathering techniques as a means of identifying problems or generating information concerning a topic from a target group of individuals, and understand the benefits and limitations of those processes.
- (3) Define and measure key parameters of health systems structure, process and outcome (status).
- (4) Use data from multiple incomplete sources to develop a comprehensive inventory within budgetary and time constraints which necessitate making trade-offs based on cost and value of added information.
- (5) Define and measure key parameters of spatial, temporal and financial accessibility of services.
- (6) Utilize appropriate parameters in small area analysis to identify potential health service populations and areas, assess the status of a community, document changes over time, establish priorities, measure program impact.
- (7) Use decision analysis to assist in prescribing a course of action consistent with personal judgements and preferences when faced with a problem of choice under uncertainty.

Scope and Limitations:

This course deals with selected planning techniques and methods, and is thus not intended to be a comprehensive overview of such techniques.

Approach and Method of Instruction:

This course is comprised of modules centered around an exercise or simulation of a methodology or technique. Modules use direct student participation on an individual and small group basis along with seminar-type discussions to clarify and point out special aspects of methodologies.

Bases for Grading:

The performance and achievement of each student will be assessed impartially based upon all indicators and measures available to the instructor, including:

- (1) in-class mid-term quiz emphasizing cognitive concepts.
- (2) module exercises.
- (3) final exam emphasizing a critical analysis of methodologies.
- (4) class discussion and participation.

Course Outline:

Most recent outline attached.

Faculty and Director Approval: _____

Director

3-2-77
Date

H.S. 6340. Health Planning Techniques

Winter Quarter, 1977: Tuesday, Thursday, 9:30-11 a.m. (Note: Taught under H.S. 8161)
Room 12, Savant Bldg.

Instructor: Dr. Bonnie J. Kay, Suite 19, Savant Bldg.
Phone: 894-4556

Office hours: T-Th, 11 a.m. or by appointment

Text: A collection of readings will be available for each class member. Additional readings from the current literature will be found on reserve in the Health Systems Reference Room, No. 10, Savant Bldg. Recommended: Griffith, J. Quantitative Techniques for Hospital Planning and Control. Nie et al, Statistical Package for the Social Sciences.

Grading: Mid term: 20% Final : 25% Class exercises: 55%

<u>Date</u>	<u>Classroom Topic</u>	<u>Preparation</u>
1/4	Introduction and Overview of course	C/N: 1,2
1/6	Goal setting: Delphi and Nominal Group processes	
1/11	Goal setting cont'd	
1/13	Health Status Indicators	HSI: 1,2,3,4
1/18	" "	
1/20	" "	
1/25	Data Inventory Exercise	DI: 1
1/27	" "	
2/1	Patient Origin	PO: 1,2,3
2/3	" "	
2/8	Mid-term Quiz	
2/10	Accessibility Analysis	AA: 1,2
2/15	" "	
2/17	Small Area Analysis	SAA: 1,2,3
2/22	" "	
2/24	" "	
3/1	Decision Analysis	DA: 1,2

Course Outline
H.S. 6340
Page 2

<u>Date</u>	<u>Classroom Topic</u>	<u>Preparation</u>
3/3	Decision Analysis	DA: 1,2
3/8	" "	
3/10	Review and course critique	
	Final Exam	

References/Materials (H.S. 6340)

Delphi - Nominal group (D/N)

1. Skutsch, M. "Goals and goal Setting: A Delphi Approach" Masters Thesis, Northwestern University, August, 1972. Chapter 2. Chapter 5 (Delphi construction) is in the H.S. Ref. Rm.
2. Van de Ven, A. and Delbecq, A. "The Nominal Group as a Research Instrument for Exploratory Health Studies". Amer. J Of Public Health, March, 1972- pp. 337-342.

Health Status Indicators (HSI)

1. Goldsmith, S. "The Status of Health Status Indicators" Health Services Reports 87 (March, 1972) 3:212-220.
2. Chen, M. "The G Index for Program Priority" in Berg, R., (ed.) Health Status Indices. Chicago: Hospital and Research Educational Trust, 1973, pp. 28-39.
3. Abrahamse, A. and Kisch, A. "Health Status Age: An Age Predictive Health Status Index". Rand Corp., Santa Monica, Ca. June, 1975, R-1626-OEO.
4. Torrence, G. "Health Status Index Models: A Unified Mathematical View". Forthcoming publication in Management Science.

Data Inventory Exercise (DI)

1. Instruction for the simulation exercise
Reeves, P. and Bergwall, D. "Data Inventory Exercise". Course 107, Applied Statistical Training Institute, Washington, D.C., 1976.

Patient Origin (PO)

1. Outline and abstract of techniques
2. Griffith, J. Quantitative Techniques, Chapter 4. pp. 65-91.
3. Weiss, I.E. et al "Determinants of Medical Care Utilization" Inquiry 8 (Dec. 1971) pp. 50-57.

Accessibility Analysis (AA)

1. Aday, L. and Andersen, R. Access to Medical Care Selected Sections.
2. Bosnac, E. et al "Geographic Access to Hospital Care" Medical Care XIV (July, 1976) pp. 616-624.

Small Area Analysis (SAA)

1. Rath/Weiss, "Parametric Factor Analysis"
2. Moroney, R. et al "The Uses of Small Area Analysis in Community Planning" Inquiry 13 (June, 1976) pp. 145-151.
3. Nie et al SPSS, Chapter 24, "Factor Analysis".

Decision Analysis

1. Raiffa, H. Decision Analysis. Chapters 0,1,2.
2. Sidel, V. et al "Model for the Evaluation of Pre-Hospital Coronary Care" Amer. J. of Cardiology, 24 (July-Dec., 1969) pp. 674-688.

GEORGIA INSTITUTE OF TECHNOLOGY
ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

(404) 894-4550

28 February 1977

Course Documentation

Course Description:

H.S. 6341. Health Systems Planning
3-0-3. Prerequisites: H.S. 6332, 6340, ISyE 6734.

Planning for health facilities including community health planning, facility master planning, health care requirements analysis, systems engineering, systems integration, financial planning and life-cycle costs.

Textbook:

Blum, Henrik L., Planning for Health, Human Sciences Press, New York, 1974, 622 pp.

Collateral Readings (on reserve):

Hyman, Herbert Harvey, Health Planning--A Systematic Approach, Aspen Systems Corporation, Germantown, MD, 1975, 460 pp.

The Nation's Use of Health Resources, 1976 Edition, National Center for Health Statistics, HRA, PHS, DHEW, Washington, D.C., 1977, 104 pp.

Selected articles.

Purposes and Objectives:

The purpose of this course is to enable the student to understand the total planning process for health care services and facilities. The consumer orientation is emphasized along with the importance of taking the new technologies in health planning and applying them to resource development and allocation to meet the needs in particular of the populations. Programs of existing and proposed federal, state, and local health planning agencies are discussed. The objectives of the course are:

- (1) To develop the student's understanding of the need to conduct planning in the public interest.
- (2) To acquaint the student with comprehensiveness in planning, the planning process, planning models, and the relationship of a plan to its implementation.

Course Documentation
H.S. 6341, 2/28/77
Page 2

- (3) To develop the student's problem-solving ability to plan health care programs consistent with economic, political, social, organizational, and physical system constraints.
- (4) To develop the student's understanding of the usefulness of the systems approach in health planning.
- (5) To develop the student's ability to utilize technically oriented methodologies in health planning as well as humanistic-politically oriented methods.
- (6) To acquaint the student with existing health planning agency organization, operation, personnel, and effectiveness.

Scope and Limitations:

This course describes the systems approach in the health planning process. The consumer orientation is emphasized as opposed to a provider orientation in health care planning. Methodologies evaluated include systems analysis, cost-benefit analysis, operations research (including simulation and gaming), and forecasting.

Approach and Method of Instruction:

Class lectures are supplemented with guest lectures by health professionals. A term report concerning health plan development and/or plan implementation is required. Exams are given to determine the student's understanding of the material covered in the lectures and reading assignments.

Bases for Grading:

See current course outline (attached).

Course Outline: (See attached)

Faculty and Director Approval

Director

3-2-77

Date

GEORGIA INSTITUTE OF TECHNOLOGY
ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

(404) 894-4550

H.S. 6341
Spring Quarter 1977

Meeting Time: 9:30-11:00 T-Th
Classroom: #12 Savant

Instructor: Dr. Howard Fagin
Office: Room 19B, Savant
Office Phone: 894-4556
Office Hours: 11:00-12:00 T-Th.

<u>Bases for Grading:</u>	Midterm Exam	30%
	Term Report	30%
	Final Exam	30%
	Class participation and assignments	10%
		<u>100%</u>

SESSION NUMBER	DATE	CLASSROOM TOPICS	PREPARATION
1	3/29	Introduction, organization of class; health and the systems approach; need for health planning.	Blum, Chap. 1
2	3/31	Environment for planning	Blum, Chap. 2
3	4/5	The planning process; planning methodologies.	Items 1, 2, 3 Hyman, Chap. 4
4	4/7	Health Systems Agencies; comprehensive health planning.	Blum, Chap. 4 Item 4
5	4/12	Functions, goals and authority of health planning agencies.	Hyman, Chaps. 5, 11
6	4/14	Data requirements for planning	Item 5, 6, 7 Blum, Chap. 5 DHEW, Chap. 1
7	4/19	Assessment	Blum, Chaps. 6, 7
8	4/21	Health systems plan	Blum, Chap. 8, Item 8
9	4/26	Quiz #1	
10	4/28	Planning process in action.	Hyman, Chap. 13

H.S. 6341
Winter 1977
Page 2

11	5/3	Health planning--outpatient care.	DHEW, Chaps. 2, 3, 4
12-13	5/5 5/10	Health planning--inpatient care (short-term).	DHEW, Chaps. 5, 6
14-15	5/12 5/17	Health planning--Inpatient care (long-term).	DHEW, Chaps. 7, 8, 9, 10
16	5/19	Health planning--home care	DHEW, Chap. 11
17	5/24	Plan implementation	Blum, Chap. 11
18	5/26	Regulation and evaluation	Blum, Chap. 12
19	5/31	Decision Analysis	
20	6/2	Decision Analysis and Review Course Critique	
FINAL EXAM			

SUPPLEMENTARY READING ASSIGNMENTS (Items)

ITEM

- 1 Health Care Planning (assorted notes).
- 2 Hardy, Owen B., "Systematic Processes Applied to Health Care Planning," Hospital Administration, Winter 1971, pp. 7-24.
- 3 Baum, Bergwall and Reeves, "Planning Health Care Delivery Systems," AJPH, March 1975, pp. 272-275.
- 4 HSA Goals and Functions (H. Fagin notes).
- 5 Flagle, Charles D., "The Value of Information for Decision Making," Engineering Foundation Conference Proceedings, pp. 55-61.
- 6 Peterson, Osler L., "Information Needs for Regional Planning," Medical Care, July-August 1970, Vol. VIII, No. 4 Supplement, pp. 187-198.
- 7 Clark, Clark and Souder, "Data for Planning from Health Information Sources," Inquiry, September 1968, pp. 5-16.
- 8 Draft Guidelines Concerning the Development of Health Systems Plans and Annual Implementation Plans, Division of Planning Methods and Technology, BHPRD, HRA, DHEW, June 17, 1976.

Appendix 6: B.S. Curriculum Options
(Curricula I, II, and III)

Included in this appendix are lists of courses contained in each of the three options in the B.S. curriculum. For administrative purposes, the options are referred to as Curricula I, II, and III. Curriculum I corresponds to the basic health systems analysis option; Curriculum II to the health systems planning option; and Curriculum III to the premedical option.

	<u>Fall</u>	<u>Winter</u>	<u>Spring</u>	<u>Q.-Hrs.</u>
<u>Freshman Year</u>				
Chem 1101-2	-	5	5	10
E.Gr. 1170	3	-	-	3
Math 1307-8-9	5	5	5	15
Pol 1251	-	3	-	3
Elec: Hist 1001 or 2	3	-	-	3
Elec: Humanities	3	3	3	9
*Elec: Physical Education	1	1	1	3
Elec: Free	3	-	3	6
	<u>18</u>	<u>17</u>	<u>17</u>	<u>52</u>

<u>Sophomore Year</u>				
Econ 2000-1	3	3	-	6
H.S. 2011	-	3	-	3
*H.S. 3111	-	-	3	3
Math 2010	5	-	-	5
Phys 2121-2-3	5	5	5	15
Elec: EE 1010 or ICS 1700	-	-	3	3
Elec: Humanities	3	3	3	9
*Elec: Statistics ¹	-	3	3	6
	<u>16</u>	<u>17</u>	<u>17</u>	<u>50</u>

¹ISyE 3027-8, M.Sci 3110-1, or Math 3710 + 1 hour elective.

<u>Junior Year</u>				
Engl 3023	-	3	-	3
H.S. 3011	3	-	-	3
H.S. 3021	-	3	-	3
H.S. 3121	3	-	-	3
H.S. 3211	-	3	-	3
H.S. 3351	-	-	3	3
H.S. 4131	-	3	-	3
*H.S. 4141	-	-	3	3
H.S. 4570	-	-	1	1
*ISyE 3131	3	-	-	3
*ISyE 4101	-	-	4	4
ISyE 4725	-	-	3	3
Mgt 3700	4	-	-	4
Psy 3303	3	-	-	3
Elec: Psychology or Sociology	-	3	-	3
*Elec: Free	-	3	3	6
	<u>16</u>	<u>18</u>	<u>17</u>	<u>51</u>

<u>Senior Year</u>				
H.S. 4571-2-3	12	-	-	12
H.S. 4693	-	-	1	1
Elec: H.S. 4351 or 4765	-	-	3	3
Elec: Health Systems	-	3	-	3
*Elec: Environmental	-	3	3	6
*Elec: Social Science	-	3	-	3
Elec: Technical	-	3	3	6
*Elec: Free	-	3	6	9
	<u>12</u>	<u>15</u>	<u>16</u>	<u>43</u>

*Curriculum change.

Curriculum II for 1977-78 Catalog
Health Planning Option

Freshman and Sophomore Years same as Curriculum I.

	<u>Fall</u>	<u>Winter</u>	<u>Spring</u>	<u>Q.-Hrs.</u>
<u>Junior Year</u>				
Engl 3023	-	3	-	3
H.S. 3011	3	-	-	3
H.S. 3021	-	3	-	3
H.S. 3121	3	-	-	3
H.S. 3211	-	3	-	3
#H.S. 3341	-	3	-	3
H.S. 3351	-	-	3	3
H.S. 4131	-	3	-	3
H.S. 4141	-	-	3	3
ISyE 4725	-	-	3	3
Mgt 3700	4	-	-	4
#M.Sci 3400	3	-	-	3
Psy 3303	3	-	-	3
+Soc 1376	-	-	3	3
+Elec: Political Economics ¹	-	3	-	3
+Elec: Political Problems ²	-	-	3	3
	<u>16</u>	<u>18</u>	<u>15</u>	<u>49</u>

¹Econ 3501, 4330, or 4331, or a substitute approved by the faculty.

²Pol 3217, 3220, 3221, or 3250, or a substitute approved by the faculty.

<u>Senior Year</u>				
+C.P. 1100	3	-	-	3
+H.S. 4021	3	-	-	3
H.S. 4570	1	-	-	1
H.S. 4571-2-3	-	12	-	12
#H.S. 4692-3	1	-	1	2
Elec: H.S. 4351 or 4765	-	-	3	3
Elec: Health Systems	-	-	3	3
Elec: Environmental	-	-	3	3
+Elec: Planning ³	6	-	3	9
Elec: Free	3	-	3	6
	<u>17</u>	<u>12</u>	<u>16</u>	<u>45</u>

196

³Technical courses that emphasize socioeconomic systems analysis or evaluation, computer methods, health systems analysis or design, and other planning techniques; to be selected from among courses approved by the faculty.

#Blanket substitution.

+Mandatory elective.

	<u>Fall</u>	<u>Winter</u>	<u>Spring</u>	<u>Q.-Hrs.</u>
<u>Freshman Year</u>				
Chem 1111-2	5	5	-	10
Chem 2113	-	-	4	4
E.Gr. 1170	-	-	3	3
Engl 1001-2-3	3	3	3	9
H.S. 2011	-	3	-	3
Math 1307-8-9	5	5	5	15
Elec: EE 1010 or ICS 1700	3	-	-	3
*Elec: Physical Education	1	1	1	3
	<u>17</u>	<u>17</u>	<u>16</u>	<u>50</u>
<u>Sophomore Year</u>				
Biol 2210-1-2	5	5	5	15
Chem 3311-2-3	3	3	3	9
Chem 3381-2	-	2	2	4
*H.S. 3111	-	-	3	3
Math 3710	5	-	-	5
Phys 2121-2-3	5	5	5	15
Psy 3303	-	3	-	3
	<u>18</u>	<u>18</u>	<u>18</u>	<u>54</u>
<u>Junior Year</u>				
Econ 2000-1	3	3	-	6
Engl 3023	-	3	-	3
H.S. 3011	3	-	-	3
H.S. 3021	-	3	-	3
H.S. 3121	3	-	-	3
H.S. 3351	-	-	3	3
H.S. 4131	-	3	-	3
*H.S. 4141	-	-	3	3
ISyE 4725	-	-	3	3
Mgt 3700	-	-	4	4
Math 2010	5	-	-	5
Psy 3304	3	-	-	3
*Elec: Hist 3010 or 1	-	3	-	3
Elec: Humanities	-	-	3	3
	<u>17</u>	<u>15</u>	<u>16</u>	<u>48</u>
<u>Senior Year</u>				
H.S. 3211	-	3	-	3
H.S. 4570	-	1	-	1
H.S. 4571-2-3	-	-	12	12
H.S. 4693	1	-	-	1
*ISyE 3131	3	-	-	3
*ISyE 4101	-	4	-	4
Pol 3200	3	-	-	3
Elec: H.S. 4351 or 4765	3	-	-	3
Elec: Health Systems	3	-	-	3
Elec: Humanities	3	3	-	6
*Elec: Free	-	5	-	5
	<u>16</u>	<u>16</u>	<u>12</u>	<u>44</u>

HEALTH SYSTEMS EXTERNSHIP RECORD

<u>Name</u>	<u>Qtr. Done</u>	<u>Title of Project</u>	<u>R.R. Call #</u>	<u>Faculty Advisor</u>	<u>Preceptor</u>	<u>Site Admin.</u>	<u>Site</u>	<u>Grad. Date</u>
Jensen, Clay	Su'73	A Study of the Business Office at The Medical Center of Columbus, GA	LP-J1 2057	Smith	Sheats	Bruce Perry	The Medical Center, Columbus, Georgia	3/74
Binion, Richard III	W'74	Scheduling in an Office-Clinic Practice	LP-B4 2176	Leonard	Blum	Sue Johnson, R.N.	F. Levering Neely, M.D.-- Private Practice	6/74
Henderson, Rex A.	W'74	The Discharge and Transfer System at Piedmont Hospital	LP-H5 2175	Emerzian	Sayford	H. Sumlin	Piedmont Hospital Atlanta, GA	6/74
Paine, Robert P.	W'74	Patient Transportation and IV and Pharmaceutical Distribution and Flow	LP-P2 2207	Fagin	Aft	J.P. VanLandingham	Kennestone Hosp. Marietta, GA	6/74
VanLandingham, Ted L.	W'74	Application of Hospital Industrial Engineering in the Lab	LP-V1 2177	Leonard	Sheats	O.S. Hilliard	John L. Hutcheson Memorial Tri-County Hospital, Ft. Oglethorpe, GA	6/74
Williamson, Ernest N.	Su'74	Patient Service Request and Charge Source Data Acquisition at Eugene Talmadge Memorial Hospital	LP-W9 2259	Bramblett	Harrison	J.B. Mathews	Div. of Computer Services, Medical College of Georgia, Augusta, GA	12/74
McQuade, Robert P.	F'74	Crawford W. Long Memorial Hospital Outpatient Billing System	LP-M3 2283	Leonard	Oakes	J.D. Henry	Crawford W. Long Memorial Hospital Atlanta, GA	3/75
Berg, J. Chandler	Sp'75	A Study of the Medical of the Medical Records Department at Crawford W. Long Memorial Hospital	LP-B4 2342	Myrick	Thomason	J.D. Henry	Crawford W. Long Memorial Hospital Atlanta, GA	6/75
Gutierrez, Adriana	W'75	Billing and Insurance Functions in a Medical Group Practice	LP-G2 2318	Leonard	Myrick	F.L. Neeley, M.D.	F. Levering Neely, M.D.-- Private Practice Atlanta, GA	6/75

Appendix 7: Field Training Sites and Projects

HEALTH SYSTEMS EXTERNSHIP RECORD

<u>Name</u>	<u>Qtr. Done</u>	<u>Title of Project</u>	<u>R.R. Call #</u>	<u>Faculty Advisor</u>	<u>Preceptor</u>	<u>Site Admin.</u>	<u>Site</u>	<u>Grad. Date</u>
Smith, Arthur R.	W'75	Courier-Patient Transport at Crawford W. Long Memorial Hospital	LP-S7 2319	Leonard	Oakes	J.D. Henry	Crawford W. Long Memorial Hospital Atlanta, GA	6/75
Buck, James G.	Sp'75	Hospital Charging Systems	LP-B4 2343	Myrick	Oakes	J. Talbird	Georgia Hospitals Shared Services, Inc., Atlanta, GA	12/75
Gettmann, Sherry B.	Su'75	A Management Information System Proposal for the Atlanta Veterans Administration Hospital	LP-G2 2371	Fagin	Sayford	J. Jarman, M.D.	VA Hospital Atlanta, GA	8/75
McQuade, Marty M.	Su'75	Doctors Hospital House-keeping Study	LP-M4 2365	Fagin	Sayford	S. Andrews	Doctors Hospital Tucker, GA	8/75
Schwartz, P. Hamilton	Su'75	A Workload Monitoring System for the Dietary Department (Hall County Hospital)	LP-S7 2374	Myrick	Oakes	J. Talbird	Georgia Hospitals Shared Services, Inc., Atlanta, GA	8/75
Steffel, Robert C.	Su'75	Charge Collection and Control Study for Vanderbilt University Medical Center	LP-S7 2368	Fagin	Freeman	W.F. Towle	Medicus, Inc. Nashville, TN	8/75
Bagg, Halsey M.	Su'75	Energy Management at Crawford W. Long Memorial Hospital	LP-B4 2372	Myrick	Thomason	J.D. Henry	Crawford W. Long Memorial Hospital, Atlanta	12/75
Brandenburg, Edward J., Jr.	Su'75	A Time-Study of EMS Dispatch and Communication Center Design	LP-B4 2375	Myrick	Thomason	J. Garvin	Metropolitan Emergency Medi- cal Services, Atlanta, GA	12/75

HEALTH SYSTEMS EXTERNSHIP RECORD

<u>Name</u>	<u>Qtr. Done</u>	<u>Title of Project</u>	<u>R.R. Call #</u>	<u>Faculty Advisor</u>	<u>Preceptor</u>	<u>Site Admin.</u>	<u>Site</u>	<u>Grad. Date</u>
Macari, Janie	Su'75	Status Offenders in the State of Georgia: Analysis of their Health Care Needs	LP-M4 2376	Fagin	Sayford	B. Edwards	Georgia Department of Human Resources, Atlanta, GA	12/75
Pattillo, Nancy (Godbold, as of 7/76)	Su'75	A Nursing Home Patient Study of the Atlanta Region	LP-P2 2373	Fagin	Sayford	R. Levine, Ph.D.	Atlanta Regional Commission, Atlanta, GA	3/76
O'Toole, Kevin	Su, F, '75	Cost Analysis of Procedures at the Henson Dental Clinic	LP-01 2409	Myrick	Thomason	E.D. Henson, DDS	Henson Dental Clinic, Atlanta, GA	12/75
Harrison, Donna	W'76	Development of a Patient Classification System for Crawford W. Long Memorial Hospital	LP-H6 2493	Kay	Bagg	K. Pope	Crawford W. Long Memorial Hospital, Atlanta, GA	3/76
Smith, Jesse G.	W'76	Project Management of the Installation of a Regional Emergency Medical Communications Center	LP-S7 2494	Myrick	---	J.B. Parris, III	Metropolitan Emergency Medical Services (MEMS), Atlanta, GA	6/76
Ford, Mary K.	W'76	A Staffing Analysis of the Clinical Chemistry Lab--Grady Memorial Hospital	LP-F2 2498	Fagin	---	F.K. Lawford	Grady Memorial Hospital, Atlanta, GA	6/76
Adiele, N.M.	Sp'76	A Central Supply Study: Staffing--Operational Analysis and Standards Development	LP-A1 2532	Fagin	Doug Smith	F.K. Lawford	Grady Memorial Hospital, Atlanta, GA	6/76
Barnes, Clayton	Sp'76	Design and Implementation of an Automatic Stocking System	LP-B4 2537	Myrick	--	Chris Clark	Northside Hospital, Atlanta, GA	9/76

HEALTH SYSTEMS EXTERNSHIP RECORD

<u>Name</u>	<u>Qtr. Done</u>	<u>Title of Project</u>	<u>R.R. Call #</u>	<u>Faculty Advisor</u>	<u>Preceptor</u>	<u>Site Admin.</u>	<u>Site</u>	<u>Grad. Date</u>
Barnes, Thomas W., III	Sp'76	A Work Sampling Study of the Indirect Component of Nursing Care at the Craw- ford W. Long Memorial Hospital	LP-B4 2535	Thomason	Halsey W. Bagg	John D. Henry	Crawford W. Long Memorial Hospital Atlanta, GA	6/76
Ciesiel, Barbara	Sp'76	An Analysis of the Health Systems Agencies: DHEW Region IV	LP-C2 2538	Kay	E.D. Ander- son	Raphael B. Levine	Health Planning/ Development Ctr., Atlanta, GA	6/76
Dickinson, Craig	Sp'76	A Systems and Procedures Study of Patient Flow in the Development Clinic	LP-D2 2534	Myrick	Tom Gentile	E. Gerner	Children's Hos- pital, Pitts- burgh, PA	6/76
Ford, Mary K. *	Sp'76	An Inventory Ordering Sys- tem for the Clinical Chem- istry Lab	LP-F2 2531	Fagin	Doug Smith	Frank K. Lawford	Grady Memorial Hospital, Atlan- ta, GA	6/76
Sanders, Hal W.	Sp'76	A Production Planning Methodology for the Hall County Hospital Laundry	LP-S7 2533	Wallace	Jim Oakes	Joseph Talbird	Hall County Hos- pital, Gaines- ville, GA	6/76
Whitby, Charles L.	Sp'76	A General Procedural and Staffing Proposal for the Admissions System of the Medical College of Georgia	LP-W5 2530	Bramblett	R. Bram- blett	J.B. Mathews	Medical College of Georgia Hos- pital and Clinic, Augusta, GA	6/76
Lewis, David M.	Sp '76	Shared Services for Phy- sicians at West Paces Ferry Hospital	LP-L1 2539	Fagin	--	Jim Brailey	West Paces Ferry Hospital	9/76
* U.S. 3971--Follow-up to externship project, Winter 76.								

HEALTH SYSTEMS EXTERNSHIP RECORD

<u>Name</u>	<u>Qtr. Done</u>	<u>Title of Project</u>	<u>R.R. Call #</u>	<u>Faculty Advisor</u>	<u>Preceptor</u>	<u>Site Admin.</u>	<u>Site</u>	<u>Grad. Date</u>
Aquin, Betsy I.	Su'76	A Study of the Usefulness of the Information Collected at MEMS	LP-A2 2608	Sayford	----	Joel B. Paris, III	Metropolitan Emergency Medical Services (MEMS), Atlanta	9/76
Brown, Harry (Rusty)	Su'76	Development of a Staffing Guide by Skill Level for Crawford W. Long Memorial Hospital	LP-B5 2622	Thomason	H. Bagg.	J.D. Henry	Crawford W. Long Memorial Hosp., Atlanta	12/76
Doran, John H.	Su'76	An Improved HSA Abstract Format	LP-D2 2616	Kay	Dr. Gordon Shaw	Raphael B. Levine	Health Planning /Development Center, Atlanta	12/76
Gavant, Morris L.	Su'76	A Study of Distribution and Control of Sterile Linen Between Central Sterile Supply and OR/OB at Grady Memorial Hosp.	LP-G1 2615	Fagin	D. Smith	Frank Lawford	Grady Memorial Hospital, Atlanta	9/76
Samra, Maria	F'76	A Staffing Analysis of the Radiology Department	LP-S5 2666	Thomason	H. Bagg	J.D. Henry (Dr. Paul Levietes)	Crawford W. Long Memorial Hospital, Atlanta	12/76
Coffey, Frank E.	F'76	An Analysis of the Nursing Services Provided Intermediate and Skilled Patients in Nursing Homes	LP-C2 2673	Myrick	----	J.M. Brucella	ORA Industries, Atlanta (Owner Of Nursing Home Chain)	3/76
Hardy, Janet	W'77	Response Time Comparisons Before and After MEMS Began*	LP-H7 2715	Myrick		Joel Paris, III	Metropolitan Emergency Medical Services (MEMS) Atlanta	3/76
* Non-Circulating Report								

HEALTH SYSTEMS EXTERNSHIP RECORD

<u>Name</u>	<u>Qtr. Done</u>	<u>Title of Project</u>	<u>R.R. Call #</u>	<u>Faculty Advisor</u>	<u>Preceptor</u>	<u>Site Admin.</u>	<u>Site</u>	<u>Grad. Date</u>
Healy, Timothy G.	W'77	Layout Evaluation and Recommendations	LP-H7 2705	Sayford	---	Richard Keene	Doctor's Hospital, Tucker, GA	6/77
Mahan, Stephen	W'77	A Systems Approach Applied to the Surgical Emergency Clinic	LP-M4 2702	Thomason	---	Ben Richardson	Grady Memorial Hospital, Atlanta	6/77
Matsunaga, Greg	W'77	Staff Utilization and Work Distribution Analysis of the Surgical Emergency Clinic Personnel	LP-M4 2703	Thomason	---	Ben Richardson	Grady Memorial Hospital, Atlanta	6/77
Mee, Henry E., Jr.	W'77	Impact Analysis of Changing to a Unit Dose System	LP-M4 2701	Myrick	---	Bruce Chandler	Kennestone Hospital, Marietta, GA	6/77
Nussman, Howard	W'77	A Study of Standard Hours in the Intensive and Intermediate Care Units	LP-N1 2704	Thomason	---	John Henry	Crawford W. Long Memorial Hospital, Atlanta	6/77
Robison, Anne L.	W'77	Distribution of Supplies from the Central Supply Department	LP-R2 2749	Sayford	---	Douglas Smith	Grady Memorial Hospital, Atlanta	3/77
Zalesky, Charlene	W'77	Feasibility Study of Alternative Business and Front-Office Procedures for a Medical Group Practice	LP-Z1 2706	Sayford	---	Howard Fagin (Menke & Fagin)	SS OB/GYN, P.A. Atlanta	3/77
Greene, Dewey	Sp'77	Staff Utilization and Delay Analysis of the Emergency Room at Crawford Long Memorial Hospital.	LP-G3 2750	Thomason	K. Pope	John Henry	Crawford W. Long Memorial Hospital, Atlanta	6/77

HEALTH SYSTEMS EXTERNSHIP RECORD

<u>Name</u>	<u>Qtr. Done</u>	<u>Title of Project</u>	<u>R.R. Call #</u>	<u>Faculty Advisor</u>	<u>Preceptor</u>	<u>Site Admin.</u>	<u>Site</u>	<u>Grad. Date</u>
Horton, John	Sp'77	A Rural Health Initiative Proposal for Lenox, GA	LP-H7 2751	Goodman	---	Alex Kemp	SW Georgia HSA, Albany, GA	6/77
Pendleton, Anita	Sp'77	The Nature and Problems of the Coordination of Services between Area V. Mental Health Systems Resources.	LP-P3 2752	Goodman	---	Annie Kuypers	HSA of Central Georgia, Warner Robins, GA	6/77
Platt, Allan	Sp'77	The Utilization of Physician Associates in the Atlanta Veterans Ad- ministration Hospital	LP-P3 2753	Sayford	---	James C. Crutcher, M.D.	Veterans Admini- stration Hospi- tal, Decatur, GA	6/77
Weaver, John W.	Sp'77	Cost Effective Inventory Control for Charter Medi- cal Corporation Facilities	LP-W10 2754	Thomason	---	Howard Mulcay	Metropolitan Eye & Ear Hospi- tal (Charter Medi- cal), Atlanta	6/77

MSHS FIELD TRAINING RECORD

<u>Name</u>	<u>Qtr. Done</u>	<u>Title of Project</u>	<u>R.R. Call #</u>	<u>Faculty Advisor</u>	<u>Preceptor</u>	<u>Site Admin.</u>	<u>Site</u>	<u>Grad. Date</u>
Baxter, Susan	Su'76	Determination of Cost Savings with the Food Management System	LP-B4 2612	Fagin		John Freeman	Grady Memorial Hospital(Medicus Corp. Project) Atlanta, Ga.	9/76
Carrico, Dawn	Su'76	Georgia Diagnostic and Classification Center Patient Flow Study	LP-C2 2613	Kay		James G. Ricketts	Georgia Diagnostic and Classification Center, Jackson, Ga.	9/76
Galimore, Don O.	Su'76	Simulation Modeling in Financial Feasibility Studies for a Health Maintenance Organization	LP-G1 2614	Myrick		Wayne Stephens	Decatur Church of Christ Senior Housing, Decatur, Ga.	9/76
Goodman, Clifford C.	Su'76	Hematocrit as an Index of Iron Deficiency in a Supplementary Food Program	LP-G1 2646	Kay		Buretta Shepherd	Kirkwood Community Health Center, Atlanta	9/76
Hagan, Robert J.	Su'76	Consumer Representation on Health Systems Agencies Board of Directors	LP-H7 2610	Fagin		---	Public Health Services, Region IV, Atlanta, GA	9/76
Steffel, Robert	Su-76	Planning the Development of Health Services Using Systems Simulation	LP-S8 2611	Wallace		---	Health Systems Research Center, Georgia Tech, Atlanta, Ga.	9/76
Tindall, Jim	Su-76	Development of a Simulation Model for a Proposed Health Maintenance Organization	LP-T1 2609	Myrick		Wayne Stephens	Decatur Church of Christ Senior Housing, Decatur, Ga.	9/76

MSHS FIELD TRAINING RECORD

<u>Name</u>	<u>Qtr. Done</u>	<u>Title of Project</u>	<u>R.R. Call #</u>	<u>Faculty Advisor</u>	<u>Preceptor</u>	<u>Site Admin.</u>	<u>Site</u>	<u>Grad. Date</u>
Aborjaily, Karen C.	F'76	Physician Productivity Assessment	LP-A2 2654	Fagin		Menke & Fagin	Nine physicians' offices, Atlanta	12/76
Bagg, Halsey M.	F'76	A Quality Control Measure for Nursing Service	LP-B5 2656	Kay		John O. Henry & Vivan Carlton	Crawford W. Long Memorial Hospital, Atlanta	12/76
Cochran, Roger	F'76	Emergency Aid Seeking Behavior in the Metropolitan Atlanta Area	LP-C2 2655	Myrick		Joel Parris, III	Metropolitan Emergency Medical Services (MEMS), Atlanta	12/76
Drake, Philip	F'76	Egleston Hospital Radiology Department Analysis	LP-D1 2661	Myrick		Ms. Pat McLure	Henrietta Egleston Hospital, Atlanta	12/76
Kaufman, Nathan	F'76	Mental Health Needs Assessment--South DeKalb	LP-K1 2657	Myrick		Constant Yang	South DeKalb Mental Health Center (Georgia)	12/76
Dollar, E. Lester	Sp'77	Materials Management Proposal for Fannin Regional Hospital	LP-D3 2755	Kay		Joseph Talbird	Fannin Regional Hospital (Georgia Hospitals Shared Services)	6/77

Entrance Requirements

Subject matter to be satisfied as prior preparation or as a non-degree candidate; *special* standing:

Linear Algebra	(Math 1711 = 5 hours)
Differential Calculus	(Math 1712 = 5 hours)
Integral Calculus	(Math 1713 = 5 hours)

Prerequisites

Subject matter to be satisfied as prior preparation or as requirements beyond the minimal 50 quarter-hour program of study; *conditional* standing:

Computer Programming	(EE 1010 or ICS 1700 = 3 hours)
Calculus-based Statistics	(ISyE 6739 = 4 hours)
Operations Research	(ISyE 6734 = 5 hours)
Work Measurement	(HS 3111 or ISyE 3115 = 3 hours)

Requisites

Subject matter to be satisfied as prior preparation or as mandatory electives in the graduate program of study; *full* standing:

Microeconomics	(Econ 6000 = 3 hours)
Industrial Psychology	(Psy 4401 = 3 hours)

Core Requirements

Quarter Hours

HS 6001	Introduction to Health Systems	3
HS 6231	Project Management	3
HS 6331	Health Systems Analysis I (management engineering)	3
HS 6332	Health Systems Analysis II (economics & finance)	3
HS 6333	Health Systems Analysis III (quantitative methods)	3
HS 6340	Health Planning Techniques	3
HS 6341	Health Systems Planning	3
HS 6351	Research and Evaluation Methods	3
HS 6570	Field Training Proposal	1
HS 6571-2-3	Graduate Field Training	6
HS 6765	Case Studies	3
HS 8092-3	Graduate Seminars	2
Sub-total - - - - -		36

Option Requirements - - - - - 14

Management Engineering Option: Approved selections from ISyE 4039 or 6301; ISyE 4726 or 6225; ISyE 6306 or 6524; ICS 4300 or M.Sci 6055; elective.

Health Planning Option: Approved selections from CP 6000, Pol 6255, or Soc 6375; Econ 6330, 6500, or ISyE 4726; ISyE 4044, 6806, or M.Sci 6051; ISyE 4053, 4056, 4157, or 4757; elective.

Total Minimal Requirements - - - - - 50

Appendix 9: Publicity Materials

This appendix contains promotional material for the graduate and undergraduate Health Systems programs and general Program publicity pieces for Year 04. Included are copies of advertisements placed in college guides and various samples of Program literature and letters sent to high school counselors, dual degree advisors, and selected lists of prospective students. Following this literature is promotional material for the master's program including: the MSHS flyer sent to those on membership lists of health-related professional organizations, to selected deans, school directors, department heads, and health professions advisors of colleges and universities, to Georgia Tech graduating seniors in certain disciplines, and to those persons on the HSRC mailing list; and advertisements placed in trade journals and guides to graduate study. The remaining items are general news releases, news items, and announcements sent to those on the HSRC mailing list and to appropriate media, and faculty recruitment advertisements.

Does the Curriculum keep my options open?

Yes, while being career oriented, the Curriculum provides an academically sound, educational base for life-long learning. It is technically and analytically oriented, and it places considerable emphasis upon interpersonal, organizational, and societal relationships. While being directed toward a particular field of application, the B.S. Curriculum in Health Systems provides students with valuable knowledge and marketable skills needed in many different fields.

Who is eligible to enroll?

Anyone satisfying Georgia Tech's admission requirements is welcome. Persons otherwise qualified but lacking certain high school subjects required for admission normally remove such "deficiencies" by taking appropriate courses in a high school or junior college.

Does this include women and minorities?

Yes; as an affirmative action institution, Georgia Tech encourages applications from women and minorities. This exciting new field should be of interest to men and women of all ages and all races, whether or not they have previously considered a technological education.

Is graduate work available?

Yes; Georgia Tech offers graduate study opportunities leading to the degree, Master of Science in Health Systems (MSHS), for professional careers as either health systems analysts or health systems planners. Also, health systems minors may be arranged for doctoral students through an interdepartmental program.

Is Georgia Tech experienced in this field?

The Program in Health Systems is a direct outgrowth of faculty involvement in this field since 1952 and of a health related academic program begun at Georgia Tech in 1958; its faculty pioneered the field and is recognized worldwide as leaders in health systems education, research, and service. The Program is a division of the College of Engineering, coordinates with the Health Systems Research Center, and is affiliated with the Medical College of Georgia.

How can I obtain more details on the Program?

Contact Dr. Harold E. Smalley, Director, Program in Health Systems, Georgia Institute of Technology, Atlanta, Georgia 30332 (Telephone: 404/894-4550).

CURRICULUM PROFILE

Freshman Year

General Chemistry
Visual Communications
Calculus
Health Education
Humanities Electives
Social Science Electives
Free Electives

Sophomore Year

Economic Principles
The Health Field
Computer Science
Statistical Analysis
Finite Mathematics
Engineering Physics
Humanities Electives
Social Science Electives

Junior Year

Written Communications
Hospital Functions and Problems
Non-Hospital Communications
Work Measurement Applications
Data Processing
Projects and Reports
Operations Analysis
Financial Analysis
Management Science
Psychology Electives
Sociology Elective
Free Electives

Senior Year

Processes and Facilities
Case Studies
Engineering Economy
Field Training Externship
Health Systems Seminars
Health Systems Elective
Technical Electives
Career Environment Electives
Free Electives



HEALTH
SYSTEMS
QUESTIONS
AND ANSWERS

- A NEW B.S. DEGREE PROGRAM
Relevant--Scientific--Practical
- A NEW CAREER OPPORTUNITY
Interesting--Important--Rewarding
- A VALUABLE PUBLIC SERVICE
Better Health Care--Lower Costs

PROGRAM IN HEALTH SYSTEMS
Georgia Institute of Technology
Atlanta

What is Health Systems?

Health Systems is a new career field concerned with the analysis, design, and improvement of health care services and their costs. It is one of the allied health professions. It uses the systems approach, applies scientific methods, and works with people to cause improvements to be installed in hospitals and other health organizations.

Is Health Systems a recognized field?

Yes, by an ever increasing number of hospital officials, doctors, and nurses, and by many national organizations such as:

- U.S. Public Health Service
- Association of Schools of Allied Health
- Hospital Management Systems Society
- American Hospital Association
- American Institute of Industrial Engineers
- Operations Research Society of America
- The Institute of Management Sciences

Why Health Systems as a career?

A career in this field is challenging and rewarding in many ways. Health care is humanitarian, and health services are important to society. The health industry is large and expensive, and is in need of improvement. A career in Health Systems is an opportunity to improve a vital public service by using modern scientific methods.

Does this career have a future?

The American people have come to think of health care as a right, not a privilege. Accordingly, the health field is rising as a national priority, along with such needs of modern society as energy conservation, urban improvement, and environmental protection. A career in Health Systems, as a part of this modern trend, is truly a career with a future.

How does the job market look?

The demand for persons trained in Health Systems greatly surpasses the present supply, and many job openings remain unfilled. This favorable job market is expected to continue for years to come as needs for more and better health services expand. Graduates of Georgia Tech's Program in Health Systems should have no problem in finding a good job.

Who are the potential employers?

- Hospitals of all kinds and types
- Nursing homes and similar institutions
- Doctors' offices and clinics
- Governmental and voluntary agencies
- Universities and medical centers
- Research and planning organizations
- Manufacturers of hospital equipment
- Health insurance companies
- Management consultants
- Architectural and construction firms

Is placement assistance available?

Yes, Georgia Tech's Program in Health Systems maintains close contact with many employers in Georgia and in other states and works with the Employment Opportunities Service of the American Hospital Association for nationwide coverage. These activities are coordinated with the aggressive program of Georgia Tech's Placement Center.

What about advancement?

Georgia Tech graduates have always had excellent opportunities for professional growth and for advancement in responsibility and compensation. These same opportunities exist for Health Systems graduates. Some of them may devote their careers to staff-advisory work, while others may become consultants or actual managers. Some may elect postgraduate study in order to advance their technical knowledge and skills, to prepare for managerial or consulting careers, to change their emphasis to education or research, or to move into allied fields such as hospital administration, community health planning, or government service.

What is the graduate's occupational role?

Graduates of the Program in Health Systems are qualified to fill a variety of technical staff positions in health institutions and in related organizations. Some of them are placed in Health Systems departments or divisions of large organizations, others become advisors or assistants to health administrators or managers, and still others join the staffs of outside agencies or firms. They often collaborate with health planners, engineers, architects, psychologists, economists, and other specialists, and with doctors, nurses, and other health personnel.

What functions are performed?

Health Systems Specialists conduct surveys, interview personnel, examine records, gather data, measure work, analyze existing methods and procedures, conduct sampling experiments, forecast future needs, design work methods, plan work assignments, lay out floor space, specify equipment and material, develop scheduling and routing plans, organize information networks, conduct economic evaluations, design managerial control systems, make recommendations for administrative decisions, and assist in the installation of improved health systems.

How do I prepare for this career?

The basic preparation is a four-year program of study such as Georgia Tech's Bachelor of Science Curriculum in Health Systems.

Must a person begin in the Freshman Class?

Not necessarily; while many Health Systems majors will be new high school graduates, many others will enter the Program with advanced standing from other Georgia Tech curricula or as transfers from other colleges. The Curriculum is flexible so that transfer students can enter it as late as the Junior Year with little or no loss of credit already earned.

Must I choose between H.S. and Pre-Med?

No, the H.S. Curriculum forms an excellent Pre-Med or Pre-Dental program, and it provides the systems orientation now being favored by leading medical educators. Using carefully chosen electives, the entrance requirements of most medical and dental schools can be completed within the 196 quarter-hours of the H.S. Curriculum.

Does the Curriculum include field training?

Yes; in addition to term projects and hospital tours in several Health Systems courses, a Senior Externship is provided. This field training is a three-month, full-time assignment in a hospital or other health care organization or agency for the purpose of learning by doing. Each extern works under the guidance of a faculty member, a technical preceptor, and a site administrator.

GEORGIA INSTITUTE OF TECHNOLOGY

ATLANTA, GEORGIA 30332

142

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

(404) 894-4550

30 November 1976

*Undergraduate: Sent to 80 MITE
students (Minority Introduction
to Engineering--Special Summer
program sponsored by Engineering
Council for Professional
Development).*

Dear Student:

We were indeed happy to have you visit the Georgia Tech campus this past summer and to have the opportunity to discuss with you our Program in Health Systems. In the event you have made a decision to apply for admission to Tech, we would like to extend an additional invitation to you and your parents or guardians to become better acquainted with our Health Systems Program.

Health systems is a relatively new field of study which provides many avenues of opportunity for rewarding careers. We are enclosing a leaflet, Health Systems Questions and Answers, which answers many of the questions you might ask about the program. If you have other questions after reading the leaflet, please call or write to us or, if you are in the vicinity, drop by to see us.

Our best wishes to you during your last year in high school, and we sincerely hope to see you back at Tech for your college degree.

Very truly yours.

Bonnie J. Kay, Ph.D.
Assistant Professor
Program in Health Systems

Enclosure

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GEORGIA INSTITUTE OF TECHNOLOGY

ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

November 1976

(404) 894-4550

*Undergraduate: Sent to 1200
high school counselors with
appropriate program literature.*

Dear Director of Guidance:

Enclosed is a packet of materials describing Georgia Tech's Program in Health Systems which we hope you will call to the attention of students considering enrolling at Georgia Tech.

Our undergraduate program has experienced considerable growth since it was established in 1972. The enrollment has steadily increased, the curriculum has been refined and expanded on a continuous basis, and we expect to attain School status within a few months. The graduate program, Master of Science in Health Systems, introduced in the Fall Quarter 1975, has an enrollment of 25 students in the current quarter.

Our health systems programs, the first of their kind in the nation, are particularly timely in view of the current national concern about more efficient and less costly methods of health care delivery. The curricula of these programs are designed to train health systems analysts and planners to work toward the goal of improving the nation's health care delivery system through the application of systems science. In addition, a special pre-medical curriculum tailored to medical and dental school requirements has proved to be an excellent pre-medical and pre-dental program, and all graduates to date who have applied to medical school have been accepted.

The enclosed materials will explain our program in more detail. Should you have further questions or need additional literature, please write to us or call (404) 894-4550.

Sincerely yours,

Bonnie J. Kay, Ph.D.
Assistant Professor
Program in Health Systems

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Enclosures

GEORGIA INSTITUTE OF TECHNOLOGY

ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

November 1976

(404) 894-4550

*Sent to 91 Dual Degree
advisors with literature.*

Dear Dual Degree Advisor:

Enclosed is a packet of materials describing Georgia Tech's Program in Health Systems which we hope you will call to the attention of students considering a dual degree with Georgia Tech.

Our undergraduate program has experienced considerable growth since it was established in 1972. The enrollment has steadily increased, the curriculum has been refined and expanded on a continuous basis, and we expect to attain school status within a few months. The graduate program, Master of Science in Health Systems, introduced in the Fall Quarter 1975, has an enrollment of 25 students in the current quarter.

Our health systems programs, the first of their kind in the nation, are particularly timely in view of the current national concern about more efficient and less costly methods of health care delivery. The curricula of these programs are designed to train health systems analysts and planners to work toward the goal of improving the nation's health care delivery system through the application of systems science. In addition, a special premedical curriculum tailored to medical and dental school requirements has proved to be an excellent premedical and pre-dental program, and all graduates to date who have applied to medical school have been accepted.

As health systems is a "people-oriented" field, we feel that the liberal arts background of dual degree students is especially appropriate as it provides the broad overview and cultural understanding needed for effective human relations. The technical knowledge needed for a health systems career can be obtained through the health systems curriculum here at Georgia Tech.

The enclosed materials will explain our program in more detail. Should you have further questions or need additional literature, please write to us or call (404) 894-4550.

Sincerely yours.

Assistant Professor
Program in Health Systems

sg

Enclosures

GEORGIA INSTITUTE OF TECHNOLOGY

ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

10 February 1977

*Sent to 410 National
Merit Scholars who
were considering
entering Georgia Tech.*

(404) 894-4550

Dear Student:

Congratulations on the fine academic record you have achieved in high school. As a National Merit Scholar, you are probably now giving serious thought to your college curriculum and your potential career field. In the event you are unfamiliar with the many outstanding opportunities available to the graduates of Georgia Tech's Program in Health Systems, we are enclosing a leaflet which will answer many of the questions you may have concerning this relatively new field.

The Program in Health Systems is administered by Tech's College of Engineering, and its curriculum combines basic industrial engineering and management techniques with behavioral science and health field knowledge. Should you need additional information after reading the enclosed leaflet, please feel free to write or call at (404) 894-4556.

Our best wishes to you as you make the important decisions on your college work and your career. Should you and your parents or guardians be in the Georgia Tech vicinity, we would be very happy to have you drop by the Health Systems Department in the Savant building to talk to our faculty and staff.

Sincerely yours,

Assistant Professor

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Enclosure

Announcements

ELMIRA COLLEGE Elmira, New York 14901

Private, coeducational, nonsectarian college, founded in 1855. Curriculum emphasizes the individual and provides for student involvement in a variety of academic activities ranging from on-campus study and research projects to off-campus internships, travel, and community service programs anywhere in the world. B.A. degree; 47 majors; preprofessional programs. Write to: Charles R. Miller, Dean of Admissions.

ELON COLLEGE Elon College, North Carolina 27244

Private, church-related college; 4-1-4 academic calendar, with two summer terms. Career-oriented majors with a strong liberal arts emphasis. Opportunities exist for independent study, internships, credit-by-examination, cocurricular activities, student government, seminars, travel abroad, and intercollegiate activities. A new major in community services offers career opportunities in social services, rehabilitation counseling, and other service areas.

EMBRY-RIDDLE AERONAUTICAL UNIVERSITY Daytona Beach, Florida 32014

A world leader in aviation education. Founded in 1926. Offers A.S. and B.S. degree programs in aeronautical engineering, aircraft engineering technology management, aviation management, aviation maintenance management, aviation administration, aeronautical studies, and aeronautical science. Specialized career certificate programs in flight training and aircraft maintenance available. Master's degree also offered.

EMMANUEL COLLEGE Franklin Springs, Georgia 38639

Coeducational, Christian-oriented 2-year college. Curricula leading to advanced study in the liberal arts, science, health-related studies, business, Christian service education, ministerial studies, music, and secretarial studies. Strong guidance and counseling program. Emphasis on intramural athletics, music, drama.

EMMANUEL COLLEGE Boston, Massachusetts 02115

Private Roman Catholic college for women; urban setting. Flexible academic curriculum with courses in the arts, humanities, sciences, and social sciences. A.A., S.W.A., B.A., B.S., and B.F.A. degree programs. Premedical, pre dental, and teacher preparation programs. Special cooperative programs in medical technology, rehabilitation counseling, early childhood and family intervention, music in rehabilitation. Individualized internships. Financial aid available: BEOG, SEOG, and work-study awards. Continuing Education Division; summer session.

FERRUM COLLEGE Ferrum, Virginia 24088

Senior division of this small, private, church-related college now grants B.A. and B.S. degrees in 5 areas of human services. Liberal arts institution in rural area of Blue Ridge Mountains; career emphasis. Awards associate's degrees in arts and sciences. Financial aid available. Write: Director of Admissions.

FINDLAY COLLEGE Findlay, Ohio 45840

New program in equestrian studies offered by the Division of Health, Physical Education, and Recreation. Two-year Associate of Arts degree program provides preparation for a career in the rapidly growing horse industry. The program is supervised by Dale Wilkinson. For further information, contact Office of Admissions.

FLORIDA INSTITUTE OF TECHNOLOGY Melbourne, Florida 32901

The University announces three new programs offered on the Melbourne campus. Computer engineering will complement the computer science program and will require courses supplied

through the mathematics and mechanical/electrical engineering departments. Environmental science and environmental engineering are now offered on the undergraduate level. All 3 programs lead to a B.S. degree.

FLORIDA JUNIOR COLLEGE AT JACKSONVILLE Jacksonville, Florida 32202

Large, innovative, public, coed community college; established in 1966. Offers wide variety of certificate, A.A. and A.S. degree programs through comprehensive academic, adult, career, and community educational services. Classes at 4 principal campuses, including a \$15-million campus in Jacksonville to open in spring, 1977; 285 part-time centers.

FLORIDA TECHNOLOGICAL UNIVERSITY Orlando, Florida 32816

Coed, 4-year state university, regionally accredited. Over 90 undergraduate and 16 master's programs. Colleges of Business Administration, Education, Engineering, Humanities and Fine Arts, Natural Sciences, and Social Sciences. General studies and co-op programs. Housing and financial aid available. NCAA member. Air Force R.O.T.C. Cooperative doctoral programs in education and electrical engineering.

GANNON COLLEGE Erie, Pennsylvania 16501

Coeducational. Diverse undergraduate degree programs in 55 different fields, including sciences, humanities, languages, arts, communications, engineering, industrial management, premed, physicians' assistant, nursing, criminal justice, social sciences, and business. Two-year certificate programs. Graduate studies in 14 areas. Most advanced library in northwestern Pennsylvania. The curriculum of a large university, with the personal atmosphere of a small college.

GARRETT COMMUNITY COLLEGE McHenry, Maryland 21541

Small liberal arts and vocationally oriented institution situated in a winter and summer recreational area in western Maryland. In addition to transfer programs, there is occupational training in environmental resources, wildlife management, human services and business. Highly active athletic program.

GEORGE WASHINGTON UNIVERSITY Washington, D.C. 20052

Private, nonsectarian, coeducational. Offers extensive majors in arts and sciences, business, education, engineering, international affairs, allied medical fields. Student-created interdisciplinary majors. Law, medical, and University libraries among more than 100 University buildings. Urban location utilized through issue-oriented programs integrating sustained field and classroom study. Enrolls 5,300 undergraduates; 1,000 freshmen and 900 transfers annually.

GEORGE WILLIAMS COLLEGE Downers Grove, Illinois 60515

Private, accredited college, established 1890. B.S. or B.A. in humanities, natural sciences, social sciences, applied behavioral science, biology, health education, physical education, recreation, ecology. M.S.W. or M.S. in administration and organizational behavior, camping and outdoor education administration, counseling psychology, health education, physical education, recreation administration, environmental education administration.

GEORGIA INSTITUTE OF TECHNOLOGY Atlanta, Georgia 30332

B.S. curriculum in health systems trains men and women in the use of scientific methods and human relations techniques toward the goal of improving hospital and health care services. Cost containment is emphasized. Curriculum combines basic industrial engineering, management, behavioral science, and health field knowledge. Electives allow full premedical preparation.

GEORGIA INSTITUTE OF TECHNOLOGY
ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

(404) 894-4550

11 January 1977

MEMORANDUM

TO: Joe Beach, Director of Publications
FROM: Harold E. Smalley, Ph.D.
SUBJECT: Revised material for Barron's Profiles

Please use the updated material below for Barron's Profiles.

Health Systems: That field of study and practice aimed toward improving the delivery of health care services principally through the application of systems science and management engineering. The Program in Health Systems offers undergraduate and graduate courses and administers programs of study leading to the degrees, Bachelor of Science and Master of Science in Health Systems. Health planning and premedical options are available under the B.S. curriculum, and options in health systems analysis and health systems planning are available under the MSHS curriculum. Both curricula feature lectures, labs, seminars, case studies, field training, specialty-area electives and placement assistance.

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GEORGIA INSTITUTE OF TECHNOLOGY

announces

GRADUATE STUDY OPPORTUNITIES

leading to the degree



MASTER OF SCIENCE IN HEALTH SYSTEMS (MSHS)

for professional careers as

- Health Systems Analysts or • Health Systems Planners

Health Systems -- that field of study and practice aimed toward improving the delivery of health care services through the application of systems science and management engineering. Emphasis is upon systematic planning, engineering design, and scientific management in respect to health care facilities, manpower, and methods.

Analysts and Planners -- Health Systems analysts normally are employed or are retained as consultants by individual hospitals or other health care institutions, whereas health systems planners typically serve in government agencies, consulting firms, or other organizations concerned with multi-institutional and community-wide systems of health care delivery.

A Specialty Degree... A Rewarding Career... A Valuable Public Service

THE MSHS CURRICULUM

- **GENERAL PURPOSE** -- To provide an academically sound, socially relevant, educational experience which will prepare graduate students for professional careers in the field of health systems analysis and planning, with upward mobility potential.
- **CURRICULUM FEATURES** -- Lectures... Seminars... Case Studies... Field Training... Specialty-Area Electives... Thesis or Project Option... Placement Assistance.
- **ADMISSIONS REQUIREMENTS** -- Bachelor's degree in a scientific field, a quantitative and analytical orientation, an ability to perform at the graduate level, and an interest in the health field.
- **TIME REQUIRED** -- One calendar year for regular full-time students, normally beginning in the Fall Quarter, the prior Summer Quarter being recommended for students requiring prerequisite courses. However, applications from full-time or part-time students will be considered for admission in any of the four academic quarters.
- **FEES AND TUITION** -- \$231.50 per quarter for Georgia residents, \$620.50 per quarter for others; non-resident tuition may be waived for holders of certain scholarships and assistantships, and for residents of Louisiana, Tennessee, and West Virginia, under the SREB Academic Common Market. There is no application fee.



Health Systems

FOR MORE INFORMATION

Call (404) 894-4550 or write to:
Dr. Harold E. Smalley,
Program in Health Systems,
Georgia Tech, Atlanta 30332

PLEASE POST

Directories: Operations Research, Systems Engineering

p. 334

University of Southern California, School of Engineering, Los Angeles, California 90007. Degree offered: MS. 1975-76 enrollment data: 1 full-time student; 2 part-time students. Tuition: \$3540 per year. \$118 per unit part time. Master's prerequisites and admissions requirements: GMAT. Doctoral prerequisites and admissions requirements: GMAT.

University of Texas at El Paso, El Paso, Texas 79968.

University of Toledo, Department of Operations Analysis, College of Business Administration, Toledo, Ohio 43606. Degree offered: MBA. Master's prerequisites and admissions requirements: GMAT, thesis depends on program.

University of West Florida, Department of Management, Omega College, Pensacola, Florida 32504. Degree offered: MBA. Tuition: \$22 per quarter hour full and part time for state residents; \$40 per quarter hour full and part time for out-of-state residents. Master's prerequisites and admissions requirements: none.

University of Wisconsin, Madison, Madison, Wisconsin 53706.

Valdosta State College, Valdosta, Georgia 31601. Degree offered: MBA. Tuition: \$483 per year. \$12 per credit hour part time for state residents; \$1131 per year, \$29 per credit hour part time for out-of-state residents. Master's prerequisites and admissions requirements: none.

Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061.

Washington University, St Louis, Missouri 63130.

Wayne State University, Detroit, Michigan 48202.

West Coast University, Los Angeles, California 90020.

Western Michigan University, Kalamazoo, Michigan 49001. Degree offered: MS. 1975-76 enrollment data: 8 full-time students; 8 part-time students. Master's prerequisites and admissions requirements: thesis depends on program.

Directory: Systems Engineering

Air Force Institute of Technology, Department of Mechanical and Engineering Systems, School of Engineering, Wright-Patterson Air Force Base, Ohio 45433. 9 faculty members. Degree offered: M.Sc. 1975-76 enrollment data: 9 full-time students. Master's prerequisites and admissions requirements: GMAT, thesis. 1975 degree recipient profile: 100% went into government. Students are Air Force officers or civilian Civil Service employees.

Arizona State University, Tempe, Arizona 85281.

Boston University, Boston, Massachusetts 02215.

Brown University, Department of Engineering, Graduate School, Providence, Rhode Island 02912. Degrees offered: Sc.M, PhD. Master's prerequisites and admissions requirements: thesis. Doctoral prerequisites and admissions requirements: dissertation.

Carleton University, Ottawa, Ontario, Canada.

Case Western Reserve University, Department of Systems Engineering, School of Graduate Studies, Cleveland, Ohio 44106. 6 faculty members. Degrees offered: MS, PhD. 1975-76 enrollment data: 73 applicants, 25 full-time students; 7 part-time students; 75% receive financial aid. Tuition: \$3300 per year, \$138 per semester hour part time. Master's prerequisites and admissions requirements: thesis depends on program. Doctoral prerequisites and admissions requirements: dissertation. 1975 degree recipient profile: 83% entered expected professional area, 17% undecided.

Clarkson College of Technology, School of Engineering, Potsdam, New York 13676. 12 faculty members. Degree offered: PhD. Students generally admitted to doctoral-level program only. 1975-76 enrollment data: 25 applicants for 10 openings; 9 full-time students; 3 part-time students; 89% receive financial aid. Tuition: \$3350 per year, \$112 per credit hour part time. Doctoral prerequisites and admissions requirements: departmental qualifying exam, dissertation. 1975 degree recipient profile: 15% went into teaching/research, 85% into business or industry.

Clemson University, Clemson, South Carolina 29631.

Colorado State University, School of Engineering, Fort Collins, Colorado 80523. 7 faculty members. Degrees offered: MS, PhD. 1975-76 enrollment data: 15 full-time students; no part-time students. Tuition: \$699 per year for state residents; \$2263 per year for out-of-state residents. Master's prerequisites and admissions requirements: none. Doctoral prerequisites and admissions requirements: dissertation.

Cornell University, Program in Systems Analysis and Design, Department of Operations Research, School of Engineering, Ithaca, New York 14853.

Dartmouth College, Program in System Dynamics, Thayer School of Engineering, Hanover, New Hampshire 03755. 5 faculty members. Degrees offered: MS, PhD. 1975-76 enrollment data: 20 applicants for 6 openings; 16 full-time students; 75% receive financial aid. Tuition: \$4230 per year, \$564 per unit part time. Master's prerequisites and admissions requirements: departmental qualifying exam, thesis. Doctoral prerequisites and admissions requirements: GRE aptitude, 1 language, dissertation. 1975 degree recipient profile: 10% went into teaching/research, 10% into government, 60% into business or industry, 20% undecided.

Fairleigh Dickinson University, Teaneck, Teaneck, New Jersey 07666.

Florida Institute of Technology, Department of Systems Engineering, School of Science and Engineering, Melbourne, Florida 32901. 4 faculty members. Degree offered: MS. 1975-76 enrollment data: 2 full-time students; 2 part-time students; 20% receive financial aid. Tuition: \$63 per quarter hour full and part time. Master's prerequisites and admissions requirements: thesis depends on program.

Georgia Institute of Technology, School of Industrial and Systems Engineering, Atlanta, Georgia 30332. 39 faculty members. Degrees offered: MS, PhD. 1975-76 enrollment data: 200 applicants for 150 openings; 77 full-time students; 59 part-time students; 35% receive financial aid. Tuition: \$902 per year, \$15 per quarter hour part time for state residents; \$2458 per year, \$47 per quarter hour part time for out-of-state residents. Master's prerequisites and admissions requirements: GRE aptitude, GRE advanced, thesis depends on program. Doctoral prerequisites and admissions requirements: GRE aptitude, GRE advanced, 1 language, dissertation. 1975 degree recipient profile: 30% went into teaching/research, 5% into government, 65% into business or industry.

Master of Science in health systems program leads to professional careers as health systems planners or analysts, dealing with management-related problems. Requirements: B.S. degree in a scientific field, quantitative and analytical orientation, ability to perform at the graduate level, and interest in the health field. Contact: Director, Health Systems.

See full description in this section.

Hartford Graduate Center, Hartford, Connecticut 06120. 2 faculty members. Degree offered: MS. 1975-76 enrollment data: 12 part-time students. Tuition: \$135 per credit hour part time. Master's prerequisites and admissions requirements: none.

Howard University, Department of Urban Systems, School of Engineering, Washington, DC 20001. 4 faculty members. Degree offered: MUSE. 1975-76 enrollment data: 10 full-time students. Tuition: \$1543 per year, \$81 per semester hour part time. Master's prerequisites and admissions requirements: none.

See full description in this section.

Illinois Institute of Technology, Chicago, Illinois 60616.

Louisiana State University in Baton Rouge, Baton Rouge, Louisiana 70803.

Loyola Marymount University, Los Angeles, California 90045.

Marquette University, Milwaukee, Wisconsin 53233.

Michigan State University, College of Engineering, East Lansing, Michigan 48824. Degrees offered: MS, PhD. 1975-76 enrollment data: 13 full-time students; 12 part-time students. Tuition: \$22 per credit hour full and part time for state residents; \$43 per credit hour full and part time for out-of-state residents.

Northwestern University, Evanston, Illinois 60201.

Oakland University, School of Engineering, Rochester, Michigan 48063. 19 faculty members. Degrees offered: MS, PhD. 1975-76 enrollment data: 16 full-time students; 29 part-time students; 75% receive financial aid. Tuition: \$32 per semester hour full and part time for state residents; \$62 per semester hour full and part time for out-of-state residents. Master's prerequisites and admissions requirements: none. Doctoral prerequisites and admissions requirements: dissertation.

Ohio State University, Columbus, Columbus, Ohio 43210.

Ohio University, Athens, Department of Industrial Systems Engineering, Athens, Ohio 45701. Degree offered: MS. Master's prerequisites and admissions requirements: thesis depends on program.

Oregon State University, Corvallis, Oregon 97331.

Polytechnic Institute of New York, Department of Operations Research, Brooklyn, New York 11201. 9 faculty members. Degrees offered: MS, PhD. 1975-76 enrollment data: 10 applicants for 0 openings; 12 full-time students; 62 part-time students; no students on financial aid. Tuition: \$3200 per year, \$95 per credit hour part time. Master's prerequisites and admissions requirements: thesis depends on program. Doctoral prerequisites and admissions requirements: 1 language, dissertation. 1975 degree recipient profile: 10% went into teaching/research, 10% into government, 80% into business or industry.

See full description in this section.

Portland State University, Portland, Oregon 97207.

Directory: Health and Hospital Administration

Adelphi University, Department of Administrative Science, School of Business Administration, Garden City, New York 11530. 10 faculty members. *Degree offered:* MBA. 1975-76 enrollment data: 24 part-time students. *Tuition:* \$97 per credit hour full and part time.

Antioch College, Washington-Baltimore Center, Baltimore, Maryland 21202. *Degree offered:* MA. *Master's prerequisites and admissions requirements:* none.

Augusta College, Augusta, Georgia 30904.

Baylor University, Waco, Texas 76706. Professionally accredited.

Boston University, Program in Health Care Management, School of Management, Boston, Massachusetts 02215. 50 faculty members. *Degree offered:* MBA. 1975-76 enrollment data: 220 applicants for 60 openings; 60 full-time students; 90 part-time students; 20% receive financial aid. *Tuition:* \$3580 per year, \$112 per credit hour part time. *Master's prerequisites and admissions requirements:* GMAT. 1975 degree recipient profile: 100% entered expected professional area.

California State College, Bakersfield, School of Business and Public Administration, Bakersfield, California 93309. 19 faculty members. *Degree offered:* MS. *Tuition:* \$144 per year for state residents; \$1299 per year for out-of-state residents. *Master's prerequisites and admissions requirements:* GRE aptitude.

California State University, Los Angeles, School of Business and Economics, Los Angeles, California 90032. *Degree offered:* MS. 1975-76 enrollment data: 6 full-time students; 20 part-time students. *Master's prerequisites and admissions requirements:* none.

California State University, Northridge, Department of Health Science, School of Communication and Professional Studies, Northridge, California 91324. *Degree offered:* MS. *Master's prerequisites and admissions requirements:* GRE aptitude, thesis.

Central State University, Department of Business, Graduate School, Edmond, Oklahoma 73034. *Degree offered:* MBA. 1975-76 enrollment data: 0 applicants; 1 full-time student; 2 part-time students. *Tuition:* \$16 per credit hour full and part time for state residents; \$40 per credit hour full and part time for out-of-state residents. *Master's prerequisites and admissions requirements:* GMAT, thesis depends on program.

City University of New York, Baruch College, New York, New York 10010. Professionally accredited. Full descriptions in book; see index.

Columbia University, New York, New York 10027. Professionally accredited.

Cornell University, Program in Medical Care Organization and Administration, School of Business and Public Administration, Ithaca, New York 14853. Professionally accredited.

C W Post Center of Long Island University, Greenvale, New York 11548.

Duke University, Department of Health Administration, Graduate School, Durham, North Carolina 27710. 18 faculty members. *Degree offered:* MHA. 1975-76 enrollment data: 164 applicants for 42 openings; 78 full-time students; 2 part-time students; 60% receive financial aid. *Tuition:* \$3600 per year, \$120 per credit hour part time. *Master's prerequisites and admissions requirements:* GMAT, GRE aptitude. 1975 degree recipient profile: 97% entered expected professional area, 3% went into business or industry.

See full description in this section.

Eastern New Mexico University, Portales, Portales, New Mexico 88130.

Florida International University, Program in Health Care Management, School of Business and Organizational Sciences, Miami, Florida 33199. 2 faculty members. *Degree offered:* MS Mgt. 1975-76 enrollment data: 7 applicants for 7 openings; 3 full-time students; 14 part-time students; 5% receive financial aid. *Tuition:* \$22 per quarter hour full time for state residents; \$62 per quarter hour full time for out-of-state residents. *Master's prerequisites and admissions requirements:* GRE aptitude. Professionally accredited.

George Washington University, Washington, DC 20052. Professionally accredited.

Georgia Institute of Technology, Atlanta, Georgia 30332.

Master of Science in health systems program leads to professional careers as health systems planners or analysts, dealing with management-type problems. Required: B.S. degree in a scientific field, quantitative and analytical orientation, ability to perform at graduate level, and interest in the health field. Contact: Director, Health Systems.

Georgia State University, Department of Health Administration, School of Business Administration, Atlanta, Georgia 30303. 4 faculty members. *Degrees offered:* MHA, PhD. *Tuition:* \$12 per quarter hour full and part time for state residents; \$37 per quarter hour full and part time for out-of-state residents. *Master's prerequisites and admissions requirements:* GMAT, GRE aptitude, thesis. *Doctoral prerequisites and admissions requirements:* GMAT, two languages, 2 languages, dissertation. Professionally accredited.

Golden Gate University, San Francisco, California 94105.

Hartford Graduate Center, Hartford, Connecticut 06120. 2 faculty members. *Degree offered:* MS. 1975-76 enrollment data: 35 part-time students. *Tuition:* \$135 per credit hour part time. *Master's prerequisites and admissions requirements:* none.

Harvard University, Cambridge, Massachusetts 02138.

Howard University, Washington, DC 20001.

Indiana University-Purdue University at Indianapolis, Indianapolis, Indiana 46202.

Indiana University School of Medicine, Indianapolis, Indiana 46202.

Johns Hopkins School of Hygiene and Public Health, Department of Public Health Administration and Health Care Organizations, Baltimore, Maryland 21205. *Degrees offered:* MPH, MHS, Sc M, DPH, Sc D. *Tuition:* \$3500 per year, \$73 per unit part time. *Master's prerequisites and admissions requirements:* thesis depends on program. *Doctoral prerequisites and admissions requirements:* 1 language, dissertation.

Long Island University Brooklyn Center, Brooklyn, New York 11201.

Medical College of Virginia, Richmond, Virginia 23298. Professionally accredited.

Northwestern University, Evanston, Illinois 60201. Professionally accredited.

Ohio State University, Columbus, Department of Hospital and Health Services Administration, Columbus, Ohio 43210. *Degrees offered:* MBA, MS. *Tuition:* \$990 per year, \$495 part time for state residents; \$2040 per year, \$1020 part time for out-of-state residents. *Master's prerequisites and admissions requirements:* GMAT, GRE aptitude, thesis depends on program.

Graduate program in Hospital and Health Services Administration offers full academic preparation for careers in hospital administration, health facilities planning, and ambulatory and clinic management. Two-year program includes a summer of administrative residency. Fully accredited by Accrediting Commission on Graduate Education for Hospital Administration.

Ohio State University College of Medicine, School of Allied Medical Professions, Columbus, Ohio 43210. 7 faculty members. *Degree offered:* MS. 1975-76 enrollment data: 289 applicants for 25 openings; 46 full-time students; 6 part-time students; 45% receive financial aid. *Tuition:* \$990 per year for state residents; \$2040 per year for out-of-state residents. *Master's prerequisites and admissions requirements:* GMAT, GRE aptitude, thesis. 1975 degree recipient profile: 75% entered expected professional area, 5% went into teaching/research, 20% into business or industry.

Saint Louis University, Department of Hospital Administration, Graduate School, St. Louis, Missouri 63103. *Tuition:* \$95 per semester hour full and part time. Professionally accredited.

San Diego State University, San Diego, California 92182.

Stanford University School of Medicine, Stanford, California 94305.

State University of New York at Stony Brook, Stony Brook, New York 11794.

Temple University, Philadelphia, Philadelphia, Pennsylvania 19122. Professionally accredited.

Texas Woman's University, Program in Health Care Administration, School of Health Care Services, Denton, Texas 76204. *Degree offered:* MS. *Tuition:* \$4 per semester hour full and part time for state residents; \$40 per semester hour full and part time for out-of-state residents. *Master's prerequisites and admissions requirements:* thesis.

Trinity University, Program in Health Care Administration, Graduate School, San Antonio, Texas 78284. 3 faculty members. *Degree offered:* MS. 1975-76 enrollment data: 53 full-time students; 71 part-time students; 9% receive financial aid. *Tuition:* \$1420 per year, \$80 per semester hour part time. *Master's prerequisites and admissions requirements:* GRE aptitude, thesis depends on program. Professionally accredited.

Tulane University, New Orleans, Louisiana 70118. Professionally accredited.

Union College and University, Institute of Administration and Management, Schenectady, New York 12308. 8 faculty members. *Degrees offered:* MBA, MS. 1975-76 enrollment data: 10 full-time students; 35 part-time students; 15% receive financial aid. *Tuition:* \$2400 per year, \$100 per credit hour part time. *Master's prerequisites and admissions requirements:* GMAT, thesis depends on program. 1975 degree recipient profile: 30% went into teaching/research, 58% into government, 2% into business or industry, 10% undecided.

Full description in book; see index.

University of Alabama in Birmingham, School of Community and Allied Health Resources, Birmingham, Alabama 35294. 64 faculty members. *Degree offered:* MS. 1975-76 enrollment data: 52 full-time students; 10 part-time students; 6% receive financial aid. *Tuition:* \$900 per year, \$34 per semester hour part time for state residents; \$1800 per year, \$58 per semester hour part time for out-of-state residents. *Master's prerequisites and admissions requirements:* GMAT, GRE aptitude or Miller Analogies, thesis depends on program. Professionally accredited.

University of Alberta, Edmonton, Alberta, Canada. Professionally accredited.

University of Alberta Faculty of Medicine, Program in Health Sciences Administration, Department of Community Medicine, Edmonton, Alberta, Canada. *Degree offered:* MHSA. *Master's prerequisites and admissions requirements:* Miller Analogies, thesis depends on program.

University of California, Berkeley, Berkeley, California 94720. Professionally accredited.

University of California, Los Angeles, Los Angeles, California 90024. Professionally accredited.

University of Chicago, Chicago, Illinois 60637. *Degrees offered:* MBA, PhD. *Master's prerequisites and admissions requirements:* GMAT. *Doctoral prerequisites and admissions requirements:* GMAT, dissertation. Professionally accredited.

University of Colorado, Denver Medical Center, Denver, Colorado 80220. Professionally accredited.

Engineering Project Investment Analysis, program sponsored by the Mechanical Engineering Department, Continuing Engineering Studies, College of Engineering, The University of Texas at Austin. Fee: \$225. Contact: Engineering Institutes, College of Engineering, Cockrell Hall 2.102, The University of Texas at Austin, Austin, TX 78712.

February 28-March 2

Computer Equipment and Services Show, sponsored by Data Processing Management Association, Sacramento Convention Center, Sacramento, CA. One-day conference on privacy legislation, March 2. Contact: Lila Suurmeyer, Conference Coordinator, DPMA International Headquarters, 505 Busse Highway, Park Ridge, IL 60068 (312/825-8124).

March 1-3

Southwestern Engineering Conference and Tool & Manufacturing Exposition, sponsored by SME and the Houston Chapter of the National Tool, Die & Precision Machining Association, Albert Thomas Convention & Exhibit Center, Houston, TX. Contact: Society of Manufacturing Engineers, 20501 Ford Rd., P.O. Box 930, Dearborn, MI 48128 (313/271-1500).

March 1-3

Basic Simulation, short course sponsored by Georgia Institute of Technology, Atlanta, GA. Fee: \$350. Registration deadline: February 18. Contact: Director, Department of Continuing Education, Georgia Institute of Technology, Atlanta, GA 30332 (404/894-2400).

March 1-4

Industrial Quality Control, short course sponsored by the Division of Continuing Education, North Carolina State University, Jane S. McKimmon Extension Education Center, Raleigh, NC. Fee: \$275. Contact: Harry H. Ethridge, Division of Continuing Education, North Carolina State University, P.O. Box 5125, Raleigh, NC 27607 (919/737-2261).

March 7-11

WESTEC '77, the Western Metal & Tool Exposition & Conference, cosponsored by ASME and SME, Convention Exhibition Center, Los Angeles, CA. Contact: Doris C. Sutcliffe, Expositions Manager, American Society for Metals, Metals Park, OH 44073 (216/338-5151).

March 14-17

An Examination of Case Studies on Medical Records Systems, forum sponsored by the Center for Hospital Management Engineering, American Hospital Association, Stouffer's National

Center Hotel, Arlington, VA. Fees: AHA members, \$105; nonmembers, \$145. Contact: Richard P. Covert, PhD, Center for Hospital Management Engineering, American Hospital Association, 840 North Lake Shore Dr., Chicago, IL 60611 (312/645-9581).

March 14-15

The Numerical and Asymptotic Techniques for Electromagnetics and Antennas, workshop-symposium sponsored by the College of Engineering of the University of Arizona, Tucson, AZ. Contact: Dr. Charles R. Hausenbauer, Engineering Department, University of Arizona, Tucson, AZ (602/884-3054).

March 14-18

Southwest Printed Circuits & Microelectronics Exposition '77, Market Hall, Dallas, TX. Contact: Industrial & Scientific Conference Management, Inc., 222 W. Adams St., Chicago, IL 60606 (312/263-4866).

March 16-17

ANMC Third Annual Conference and Exposition, McCormick Inn, Chicago, IL. Theme: *TRANS METRIC*. Contact: George B. Buchanan, American National Metric Council, 1625 Massachusetts Ave. NW, Washington, DC 20036.

March 21-23

Applied Statistical Modeling, engineering institute sponsored by the College of Engineering, The University of Texas at Austin, Austin, TX. Topics: *Regression Analysis and Cluster Analysis and Automatic Interaction Detection*. Fee: \$350. Deadline: February 28. Contact: Engineering Institutes of the College of Engineering, Ernest Cockrell Hall 2.102, The University of Texas at Austin, Austin, TX 78712 (512/471-3506).

March 21-25

Second Energy Environment Conference, sponsored by the American Defense Preparedness Association, Radisson-Muehlebach Hotel, Kansas City, MO. Contact: Commander Arthur D. Sullivan, USN (Ret.), American Defense Preparedness Association, 819 Union First Bank Bldg., 740 15th St. NW, Washington, DC 20005 (202/347-7250).

March 27-31

Reliability Engineering, international seminar sponsored by the Centre for Management and Industrial Development, Rotterdam, Netherlands. Seminar will be conducted in English. Contact: CBO-CENTRUM VOOR BEDRIJFSONTWIKKELING, Exchange Building (Beursgebouw), P.O. Box 30012, Rotterdam, Netherlands.

April 18-22

Exceptional opportunities with large plastics manufacturer and processor. Require BS or MSIE with 2-4 years experience. Full range activity — standards, methods, layout, handling, budgets, cost, systems, and economic analysis. Need ambitious self-starters who can work with minimum of supervision. Excellent opportunity to demonstrate individual talents. Present openings in Northeast, Midwest, and Westcoast. Submit resume in confidence to:

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Applications now being considered from persons with the BSIE or similar degree for entering Georgia Tech's MSHS Program in any of the four academic quarters. This new Master's program leads to professional careers in the analysis and planning of institutional and community-wide management systems of health care delivery. Employment opportunities for graduates are excellent. For more information, call or write to:

Harold E. Smalley, Ph.D.
Program in Health Systems
Georgia Institute of Technology
Atlanta, Georgia 30332
(404) 894-4550

(As an affirmative action institution, Georgia Tech encourages applications from women and minorities.)

UNIVERSITE DE MONCTON INVITES APPLICATIONS OF PROFESSORS IN INDUSTRIAL ENGINEERING

FUNCTIONS: Teaching, research and/or consultation in the fields of: Industrial Engineering, Management Science, Systems Engineering.

QUALIFICATIONS: Ph.D. or equivalent. A good knowledge of French is essential.

COMMENCING DATE: September 1, 1977 or earlier

APPLICATIONS: Last date for applications: May 30, 1977 or until the post is filled.

Send curriculum vitae and relevant information to:

Director, Department of Engineering
Faculty of Science and Engineering
Université de Moncton
Moncton, New Brunswick E1A 3E9



The Georgia Tech WHISTLE

Vol. 3, No. 2

Jan. 24, 1977

Academic Services Committee Report

By the Statutes of the Institute, the Academic Services Committee is charged with responsibility to review annually and make recommendations to the faculty concerning the policies and procedures related to such supportive academic facilities as the Library, Continuing Education, Office of Computing Services, and the Research Centers.

In performing these duties, the Committee conducted a Faculty opinion survey in the Spring Quarter, 1975. The survey form was mailed to 300 randomly selected members of the General Faculty and 186 usable responses were received. The majority of the Committee's efforts during the 1975-76 academic year was devoted to analysis of the responses to this survey with the predominant portion concentrated on Continuing Education.

In general the Faculty responses to questions regarding the Library were most favorable and those minor problems which were noted were referred to the Library Subcommittee with no formal action by the Committee.

Regarding the Office of Computing Services, the Committee issued a formal report to the Computer Advisory Board (CAB). This report contained recommendations concerning a possible user priority system, centralization of all computing facilities, and publication of OCS and CAB activities.

For many meetings devoted entirely to discussion of survey results pertaining to Continuing Education, the Committee issued a report on November 18, 1975, which included the following recommendations:

Faculty participating in Continuing Education programs be allowed to choose their method of compensation from:

1. Direct compensation on an hourly basis at a rate to be established per hour for preparation, teaching and administering a Continuing Education program. Total compensation in any academic year from Continuing Education should be limited. A suggested limit is the current limit on consulting: an average of one day per week. In the event that participation exceeds the limit, compensation will be based on (b).

(b) Substitution of Continuing Education participation for normal teaching either during the academic year or during the summer session on the basis of 30 accountable hours of teaching or administration in Continuing Education for one three-credit-hour course.

2. Since the Academic Faculty is the primary provider, both in development and teaching of Continuing Education programs, it is strongly recommended that the Vice President for Academic Affairs be fully responsible for all policies and practices pertaining to Continuing Education.

The motion to approve these recommendations (which were purely advisory to the President) was debated at the General Faculty Meeting of February 10, 1976, but no vote was taken. At a subsequent meeting on April 6, 1976, the Committee supported a substitute motion to create an Ad Hoc Committee on Continuing Education. The Committee presented a detailed report of its discussion and findings to the Ad Hoc Committee.

Survey results pertaining to the Research Centers were inconclusive and efforts relating to their activities were postponed until the 1976-77 year.

Independent of the survey, the Library Subcommittee, a standing subcommittee, circulated a draft set of regulations relating to Library services. Final action is still pending.

Health Systems Holds Seminars

The American Medical Care System will be the theme of a series of seminars sponsored by the Program in Health Systems at Georgia Tech. The seminars will feature distinguished experts from throughout the nation speaking on subjects such as biomedical engineering, crisis medical care, and mobile medical services. In addition to the featured speakers, representatives of private and government medical agencies in Georgia will attend each session. The seminars will be held every Thursday between January 20 and March 10 at noon in Room G1 of the Engineering, Science, and Mechanics Building on the corner of Uncle Heinie Drive and Cherry St. on the Tech campus. The public is invited to attend.

Hazardous Weather Plan Revised

The Director of Campus Safety has revised the Hazardous Weather Plan which outlines procedures employed by the Institute when it may be necessary to either suspend classes and/or declare the campus closed for operation.

During periods of potentially hazardous conditions local radio stations (WGST, WREK, WSB, WQXI, and WPLO) will be notified regarding the status of Georgia Tech, i.e., whether or not classes have been suspended, and/or the campus closed for operation. These stations will broadcast this information periodically, and employees should listen to any one of them.

Key administrative offices should have internal operating plans for times when the campus is closed for operation to ensure that essential campus services are maintained.

As a reminder, suspending classes does not constitute a holiday, and all employees should make reasonable efforts to report for work.

Continuing Education Short Courses Offered

The following short courses will be offered by the Dept. of Continuing Education during the months of February and March: Personnel Management, February 1-3; Airport Planning and Design, February 7-11; Traffic Signal Workshops: Traffic Signal Operation at Local Intersections, February 7-11; Plant Layout Principles and Practices, February 9-11; Nuclear Power Safety, February 14-18; Design of Construction and Process Operations, February 16-18; Project Management with CPM & PERT, February 22-25; Decision Making for Manufacturing Management, February 23-25; Basic Simulation, March 1-4; Principles of Scanning Antenna Design, March 7-11; Management Dynamics and Effective Decision Making, March 7-11; General Supervisors, March 14-18; Management for Engineers, March 14-18; Cost Benefit Analysis, March 16-18; Decision Analysis for Management, March 16-18; Some Simple Facts About Management, March 17; Successful Selling Seminars, March 23-24; Teletraffic Theory and Engineering, March 30 - April 1.

For further information, call or write the Dept. of Continuing Education at 894-2400.

FACULTY POSITION ENGINEERING ADMINISTRATION

A faculty position in a long established graduate program in Engineering Administration is available for September 1977. In addition to general engineering administration and knowledge of computer simulation, the position is concerned with individual areas of specialization, such as environmental and energy management, construction management, and behavioral science. An earned doctorate is required, together with the ability to initiate and conduct research, and dedication to an academic career. At least one degree in engineering or science is required. Academic rank and salary are dependent on qualifications. Send information, including facts of academic, industry, or government experience, and publications to:

Chairman
Department of Engineering
Administration
School of Engineering and
Applied Science
The George Washington
University
Washington, D.C. 20052

*The George Washington University
is an equal opportunity/affirmative
action employer.*

IE BRIEFS

Mark February 20-26 on your calendar — that's Engineers Week 1977. "Key to the Future... Engineering" is this year's theme. For information on promotional materials ranging from radio spot announcements to bumper stickers, contact the NSPE Public Relations Department, 2029 K St. N.W., Washington, DC 20006.

To cap or not to cap? The International Committee for Weights and Measures (CIPM) has chosen not to adopt the symbol "L" for liter in lieu of the lowercase "l," despite a unanimous recommendation by the Consultative Committee on Units (CCU) and the National Bureau of Standards (NBS) that they do so. NBS has decided to retain use of capital L. Its Acting Director Ernest Ambler has expressed disappointment in the CIPM decision. "We have found that the lowercase 'l' is simply not suitable for either typing or printing, and therefore we plan to continue to support the change," he wrote to Dr. John Dunworth of CIPM.

A call for papers has been issued by the Canadian Operational Research Society for its 1977 Annual Conference, to be held in Montreal May 16-18. Conference theme is "O. R. in Contemporary Society: The Global Perspective." Session areas are Models of Public and Private Organizations, Natural Resource and Private Organizations, Transportation and Communication Models, Social Consciousness Models, and Macro Systems and the Future of O. R. Abstracts (maximum 250 words) must be mailed by February 15 to Dr. Andrew Berczi, Programme Chairman, CORS '77, Dean of the Faculty of Commerce and Administration, Concordia University, Montreal, Quebec, Canada H3G 1M8.

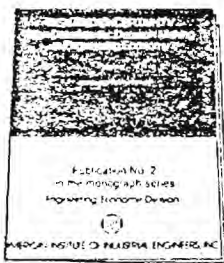
"Improving Productivity through Industry and Company Measurement" was a recent conference sponsored by the National Center for Productivity and Quality of Working Life. Free copies of the 77-page proceedings are available from the Center. A 149-page *Directory of Labor-Management Committees* is also offered free. Write the National Center for Productivity and Quality of Working Life, 2000 M St., N.W., Washington, DC 20036.

The 1977 Abrasive Engineering Society's Awards of Excellence competition is seeking entries. Each year firms are cited by AES for outstanding achievement in abrasive technology in several areas: abrasive belt, centerless, cut-off, cylindrical, deburring, honing, lapping and free-abrasive machining, surface, opposed disc, off-hand grinding, scale and rust removal, and snagging. The 1977 awards will be presented at the Society's Conference & Exhibition in Cleveland in May. Competition information may be obtained from AES, 1049 S. Main St., Plymouth, MI 48170 (313/455-7703). Entry deadline is March 1.

Georgia Institute of Technology's first Master of Science in Health Systems degrees were awarded to seven graduate students in September. The program was established in 1975 as part of a special training project supported by a national priority grant from the Bureau of Health Resources Department of HEW. The grant provides for the development and administration of academic courses and degrees in Health Systems at both the undergraduate and master's levels.

"Recommended Industrial Ventilation Guidelines" is a 330-page soft-cover publication prepared by the Department of Health, Education, and Welfare's Public Health Service, Center for Disease Control, and the National Institute for Occupational Safety and Health. Single copies are available from Publications Dissemination, NIOSH, 4676 Columbia Pkwy., Cincinnati, OH 45226.

NEW AIIE PUBLICATION!



Edited by Gerald A. Fleischer

RISK AND UNCERTAINTY: Non-Deterministic Decision Making in Engineering Economy is directed to the practicing engineering economist, the professional concerned with capital budgeting and the general application of economic principles in engineering and business decision making. This monograph offers a compendium of 16 articles reprinted from various journals, including the most important recently published articles on the subject and a comprehensive bibliography containing more than 175 references to related publications.

It is the intent of the editor to bridge the gap between articles in professional journals and academic texts on the subject of **risk and uncertainty** in engineering economy.

PRICE: \$10.00 / \$6.00 to AIIE members
ORDER #: AIIE-EE-75-1 (There is no charge for postage and handling when payment accompanies order. Membership number must accompany order.)

ORDER FROM:
AIIE Publication Sales
American Institute of Industrial Engineers, Inc.
25 Technology Park
Norcross, GA 30071

HEALTH SYSTEMS STUDENTS GET REAL-WORLD EXPERIENCE

A unique feature of Georgia Tech's Program in Health Systems is the integration of field training and classroom instruction aimed toward producing health oriented systems manpower with marketable skills and upward mobility potential. The B.S. Curriculum includes a Senior Externship of full-time work for an academic quarter on a systems project in a cooperating health care institution or planning agency. Graduate students also receive field training through master's field projects, and some of them gain additional field training as Graduate Assistants assigned to research projects of the Health Systems Research Center or to planning or service projects of cooperating organizations.



Dr. Howard E. Fagin (L) of the Health Systems faculty and Ms. Melvia Richards (C), Director of Central Services and Stores, meet with Mr. N. M. Adiele (R), Senior Extern, to receive a progress report on Mr. Adiele's staffing study in central supply at Grady Memorial Hospital. A June 1976 B.S. graduate in Health Systems, Mr. Adiele will enter medical school at Howard University in September 1976.



While at Grady, Dr. Fagin chats with Ms. Sherry B. Gettman (C), a 1975 H.S. graduate now employed as a systems analyst at Grady, under the direction of Mr. Douglas G. Smith (R), head of the hospital's systems department. Ms. Gettman explains her on-going study of job descriptions in central supply.



Mr. Carl F. Thielmann (L), Assistant Administrator at Piedmont Hospital, receives a briefing from Mr. Robert C. Steffel (R), H.S. graduate student, on a study of X-ray film handling. Mr. Steffel is a sponsored GRA at Piedmont, and he expects to receive the MSHS degree in September 1976.



Mr. Halsey M. Bagg (R), H.S. graduate student, reviews some of the results of his study of patient transportation at Crawford W. Long Memorial Hospital with Ms. Katherine Pope, R.N. (L), Director of Nursing Service, and Ms. Evelyn McCoy, R.N. (C), who initiated the study. Mr. Bagg is a sponsored GRA at Crawford Long, and he expects to receive the MSHS degree in December 1976.



Ms. Susan L. Baxter, H.S. graduate student, takes notes on a kitchen area to be converted into an ingredient room as part of a dietary study being conducted at Grady Memorial Hospital by Medicus Corporation. Ms. Baxter, a sponsored GRA with Medicus, works under the direction of Dr. John R. Freeman and Mr. L. Holt Cloud. She expects to receive the MSHS degree in September 1976.

GEORGIA INSTITUTE OF TECHNOLOGY

ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

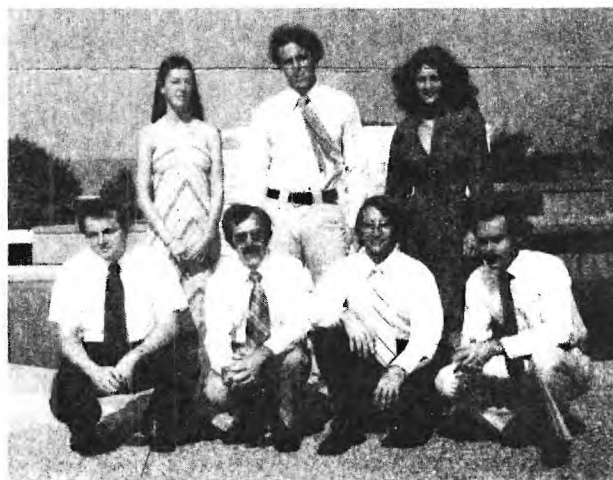
(404) 894-4550

30 September 1976

FIRST MASTER OF SCIENCE IN HEALTH SYSTEMS DEGREES AWARDED

Seven graduate students were awarded the new Master of Science in Health Systems (MSHS) degree during the September commencement exercises at Georgia Tech. These are the first students to receive this degree, which was established in 1975 as a part of a special training project supported by a national priority grant from the Bureau of Health Resources Development, HEW. This grant provides for the development and administration of academic courses and degrees in Health Systems at both the undergraduate and the master's levels. An additional five students are expected to receive the MSHS degree in December.

Prospects for the MSHS program and its graduates look bright, and the placement of these graduates in health related organizations is going well. A Fall Quarter graduate class of 25 students is anticipated, including students currently enrolled. Applications are still being accepted for students who wish to begin in the Winter, Spring, or Summer 1977.



Tech's first MSHS graduates. Standing (L-R): Dawn Carrico, Cliff Goodman, Susan Baxter. Kneeling (L-R): Don Galimore, Bob Hagan, Bob Steffel, Jim Tindall.

NEW TRAINING GRANT AWARDED

The Health Systems Research Center (HSRC) has been awarded a special project grant of \$71,256 by the Division of Associated Health Professions, Bureau of Health Manpower, HEW, for first-year support of the planning, establishment, development, and evaluation of new health planning options within the Program in Health Systems. Federal support for this activity is expected to total approximately \$225,000 over a period of three and one-half years, beginning 1 July 1976. The program will be under the direction of Dr. Harold E. Smalley, Regents' Professor and Director of HSRC.

The overall purpose of the new training project is better health service delivery and improved health care through wider use of manpower specifically trained to apply both the science and the art of health planning. Toward this purpose, the specific objective of the project is a health planning option within existing curricula in health systems that will expand the competence of its graduates to include the knowledge and skills required for planning effective health service systems. Trainees completing the program will be prepared to function in professional positions as either health systems analysts or health systems planners, with upward mobility potential for future careers in administrative or managerial positions in the health field.

Georgia Tech News Bureau

Atlanta, Georgia 30332

(404) 894-2452

For further information
contact:

May 19, 1977

Rhonda Cook, Information Specialist

The establishment of a School of Health Systems as an academic unit of Georgia Tech's College of Engineering was announced at the May 10-11 meeting of the Board of Regents of the University System of Georgia.

The new school, which replaces the Program in Health System and incorporates the Health System Research Center, will become the eleventh school of the College of Engineering effective July 1.

The school will combine and consolidate several ongoing programs of education, research and community outreach in the field of health systems, defined as the application of system science and management engineering toward the goal of improving health care services.

The general objectives of the School of Health Systems will be excellence in teaching and scholarship and innovation in research and service. The school will strive to provide an educational environment that will encourage and assist students to develop fully their capabilities both as professionals and as human beings.

It will seek the discovery and generation of new knowledge, ways of applying such knowledge innovatively for the benefit of society and mankind and the development of creative skills required for the design and improvement of systems of health care delivery.

The academic program of the School will include undergraduate and graduate courses and curricula leading to the degrees Bachelor of Science and Master of Science in Health Systems.

Health planning and premedical options will be available under the B.S. curriculum and options in health systems planning and hospital management engineering will be available under the MSHS curriculum.

-more-

2.

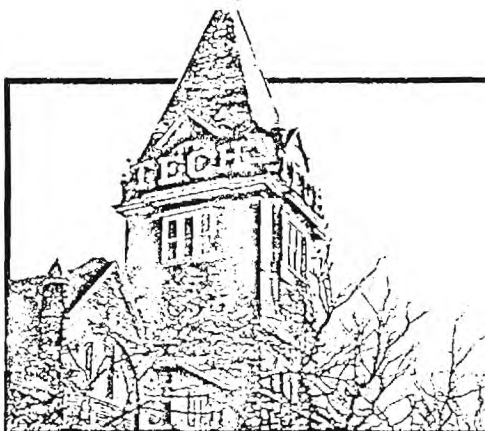
The research program of the School will be concerned mainly with developing systems for planning, designing and managing health care facilities, manpower and methods with techniques for evaluating current and proposed health care delivery systems.

Through the Health Systems Research Center, the School will engage in community outreach services, including consultation, systems improvement projects, technical staff assistance, faculty directed student externships, referral services and seminars, short courses and conferences.

Dr. Harold E. Smalley, who has been involved in health systems since 1952, will be the director of the new school. A Regents' Professor, he had directed the health systems activities at Tech for 19 years and co-authored a textbook. Dr. Smalley has written extensively in the field and has done considerable research in the analysis, design and improvement of health systems.

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Dr. Smalley resides on Huntley Dr. in Sandy Springs.



The Georgia Tech

WHISTLE

Vol. 3, No. 18

May 30, 1977

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Changes Made in Travel Regulations

The Board of Regents of the University System of Georgia has made two changes in the travel regulations that became effective April 13.

Tips deemed necessary in the course of official state travel by any of the approved modes are reimbursable as travel.

The other change is regarding subsistence expenses. Expenditures for entertainment, laundry, valet service and other similar personal expenses cannot be reimbursed. However, tips rendered in response to services provided an employee while on travel status may be reimbursed since reasonable tips are a consideration related to service and are not therefore considered to be a gratuity.

For further information contact the business office.

Awards Banquet To Be Held

All members of the faculty and staff are invited to attend the Retirement and Awards Dinner on Tuesday, May 31, at 7:30 p.m. in the Student Center Ballroom.

To be honored at the dinner are 32 1977 retirees who have been at Georgia Tech for 10 years or more, the 25-year Gold-T recipients, outstanding teacher award recipients and the ANAK award recipient. Three will be honored with outstanding teacher awards and 29 will receive the 25-year Gold-T award.

The ANAK award is given to the faculty member who is felt to have made the largest contribution to Georgia Tech. The ANAK award is kept secret until the announcement at the dinner.

Tickets are still available and may be picked up in Room 4-A of the Savant Building or call ext. 2454 for further information.

LIBRARY HOURS

June 3 - June 21

WEEKEND BEFORE EXAMS

Fri., June 3	8 A.M. to Midnight
LATE NIGHT STUDY AREA	11 P.M. to 2 A.M.
Sat., June 4	9 A.M. to Midnight
LATE NIGHT STUDY AREA	11 P.M. to 2 A.M.
Sun., June 5	2 P.M. to Midnight
LATE NIGHT STUDY AREA	11 P.M. to 2 A.M.

EXAMINATION WEEK

Mon., June 6	8 A.M. to Midnight
Thurs., June 9	Closed
LATE NIGHT STUDY AREA	11 P.M. to 2 A.M.
Fri., June 10	8 A.M. to 6 P.M.
Sat., June 11	9 A.M. to 6 P.M.

QUARTER BREAK

Sun., June 12	Closed
Mon., June 13	8 A.M. to 5 P.M.
Fri., June 17	8 A.M. to 6 P.M.
Sat., June 18	9 A.M. to 6 P.M.
Sun., June 19	Closed

REGISTRATION

Mon., June 20	8 A.M. to 6 P.M.
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SUMMER

Tues., June 21	8 A.M. to Midnight
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RESUME REGULAR SCHEDULE

Continuing Education Courses To Be Held

The following Continuing Education courses will be offered during the month of June.

"Management for Engineers" will be offered June 6-10. This course is designed to evaluate some of the newer research findings that are applicable to organizations based on engineering or science and to discuss some of the management techniques that have been successful in organizations of this type.

This course should give the practicing manager an opportunity to improve his conceptual human and technical skills. It should also aid the manager in doing a more efficient job of planning, organizing, motivating and controlling.

June 9-10, a course entitled "Cost Benefit Analysis" will be conducted. This course is a host of techniques for evaluating the merits of public projects. Many important issues on the local, state and federal level are currently using cost benefit analysis as an aid to decision making.

The techniques of cost benefit analysis are constantly being revised and refined. These

Continued on page 2

GEORGIA INSTITUTE OF TECHNOLOGY
HEALTH SYSTEMS RESEARCH CENTER
ATLANTA, GEORGIA 30332

(404) 894-4550

May 1977

SCHOOL STATUS FOR HEALTH SYSTEMS

At its monthly meeting 10-11 May 1977, the Board of Regents of the University System of Georgia approved the establishment of a *School of Health Systems* at the Georgia Institute of Technology effective 1 July 1977.

Health Systems will become the eleventh school of Georgia Tech's College of Engineering, replacing the present "Program in Health Systems" and incorporating the Health Systems Research Center. HSRC will continue its missions of interdisciplinary and interinstitutional research, service, and continuing education as it becomes the community outreach arm of the School of Health Systems.

The general objectives of the School of Health Systems will be excellence in teaching and scholarship, and innovation in research and service. The School will strive to provide an educational environment that will encourage and assist students to develop fully their capabilities both as professionals and as human beings. It will seek the discovery and generation of new knowledge, ways of applying such knowledge innovatively for the benefit of society and mankind, and the development of creative skills required for the design and improvement of systems of health care delivery.

The academic program of the School will include undergraduate and graduate courses, and curricula leading to the degrees, Bachelor of Science and Master of Science in Health Systems. Health planning and premedical options will be available under the B.S. Curriculum, and options in health systems planning and hospital management engineering will be available under the MSHS Curriculum.

The research program of the School will be concerned mainly with developing systems for planning, designing, and managing health care facilities, manpower, and methods, and with techniques for evaluating current and proposed health care delivery systems. Through the Health Systems Research Center, the School will engage in community outreach services, including consultation, systems improvement projects, technical staff assistance, faculty directed student externships, referral services, and seminars, short courses, and conferences.

GEORGIA INSTITUTE OF TECHNOLOGY
ATLANTA, GEORGIA 30332

SCHOOL OF HEALTH SYSTEMS
COLLEGE OF ENGINEERING

(404) 894-4550

June 1977

H.S. STUDENT ELECTED TO HSA BOARD



Ms. Horne

Audrey V. Horne, a graduate student in the School of Health Systems, was elected to the Board of Directors of the North Central Georgia Health Systems Agency on April 27. The HSA, one of the some 200 organizations mandated by the National Health Planning and Resources Development Act of 1974 for planning, reviewing, and developing health resources, facilities, manpower, and services, covers the 24-county health service area surrounding Atlanta.

Board members, elected to three-year terms, work to improve the health of area residents by increasing the accessibility, availability, acceptability, and continuity of health services. The HSA is attempting to restrain increases in the cost of health services, and to prevent unnecessary duplication of health resources. Ms. Horne was chosen to represent Fulton County consumers on the 69-member Board, composed of providers, consumers, and government officials, and in June she was appointed to the influential Project Review Committee.

A native Atlantan, Ms. Horne holds a B.A. degree from Barnard College and a master's degree in education from Tufts University. She expects to receive her MSHS degree from Georgia Tech in 1978.

H.S. FACULTY MEMBER TO TOUR CHINA



Dr. Kay

Dr. Bonnie J. Kay, assistant professor in the School of Health Systems, has been selected as one of twenty delegates who will travel to the Peoples' Republic of China in July and August on a six-week study tour sponsored by the Southeastern Region of the U.S.-China Peoples Friendship Association. The group will travel in urban and rural areas in several provinces. Dr. Kay expects to visit a number of medical care centers in the larger cities, along with primary care clinics and health stations in both urban areas and on rural communes.

GEORGIA INSTITUTE OF TECHNOLOGY

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June 1977

LAPATRA NAMED PROFESSOR OF HEALTH SYSTEMS

Dr. Jack W. LaPatra, formerly with the University of California, joined the School of Health Systems at Georgia Tech in June as Professor of Health Systems. He will assume a variety of responsibilities for the School. In addition to teaching undergraduate and graduate courses, advising students, and directing student projects, he will participate in the development of new courses and in the improvement of existing courses and will assume a major role in the research activities of the School's Health Systems Research Center.

Dr. LaPatra has a proven record as an educator, innovator, and investigator with considerable experience in the field of health systems. He holds M.S. and Ph.D. degrees from the University of Iowa and a bachelor's degree in electrical engineering from Clarkson College of Technology. He has done postdoctoral study in industrial engineering and operations research at the University of California in Berkeley. For the past 14 years LaPatra has taught in both the College of Engineering and the Department of Community Health, School of Medicine, at the University of California in Davis. In 1975-76 he was a visiting professor at the Graduate School of Administration at the University's Riverside division. Earlier teaching experience was gained at the University of Iowa, the University of the Pacific, and the U.S. Naval Postgraduate School in Monterey, California. He has been the recipient of seven teaching and research grants and awards.

*Jack W. LaPatra*

In addition to a number of journal articles, Dr. LaPatra is the author of three published books and has three additional books in progress. His professional expertise in the areas of systems analysis, modeling, information systems, social problem-solving, public policy and administration, and evaluation is expected to enhance both the research and the academic programs of the School of Health Systems.

charts aid the reader in selecting equipment and models for specific applications. *General Scientific Equipment Co.*

Circle 81 on Reader Service Card

Ionizing work station is illustrated in four-page brochure 830765M. Station is intended for use in the electronics industry at any inspection, assembly, or other work station where C/MOS, MOS/FET, and other static sensitive devices must be handled. The work station provides a constant field of ionization to neutralize any existing static field, simultaneously grounding the worker. *Static Inc.*

Circle 82 on Reader Service Card

Metal grating products are covered in 24-page catalog. It includes stair treads, aluminum plank, architectural grillework, and specialized products. Safe load tables, engineering data, and other information are presented. *Borden Metal Products Co.*

Circle 83 on Reader Service Card

Machinery installation advice is given in 12-page brochure. With emphasis on a coordinated systems approach, the brochure covers three basic areas: precise alignment, effective anchoring, and vibration isolation. Also included are descriptions and specifications of component parts. *Machinery Installation Systems.*

Circle 84 on Reader Service Card



Industrial doors are featured in eight-page brochure, "Important Facts." It covers impact, transparent, strip, and sliding doors, as well as available controls and operators. Specifications, charts,

and a doorway evaluation guide are provided. *W.B. McGuire Co.*

Circle 85 on Reader Service Card

Filter media products are outlined in six-page Catalog 601. It contains descriptions of various types of dust bags, filter cloths, nonwoven roll media, die cut filter paper, cages, custom made filters, and specialty items. *Snow Filtration Co.*

Circle 86 on Reader Service Card



"**Handbook of Mini-Pitch Timing Belt Drives**," 228 pages, lists over 1,100 off-the-shelf inch and metric timing belts and pulleys. Miniature drives are designed for power transmission synchronization, metering, and conveying applications wherever space is at a premium. A comprehensive technical reference section includes 77 pages of computer generated Drive Ratio and Center Distance Tables to aid in selecting the proper belts and pulleys. *Stock Drive Products.*

Circle 87 on Reader Service Card

Plant and equipment catalog lists nine used plants and over 350 pieces of equipment, including extruders, dryers, ball mills, kilns, centrifugals, pressure vessels, blowers, columns, reactors, kettles, evaporators, pumps, heaters, and compressors. *Louisiana Chemical Equipment Co.*

Circle 88 on Reader Service Card

Woven-wire replacement belts for conveying systems are detailed in four-page literature. Types of weaves are illustrated, along with side chain belts, pin roll drives, lifts, and cleats. Applications are included in the food processing, glass and ceramics, process, and metal

heat treating industries. *Wire-mation Industries, Inc.*

Circle 89 on Reader Service Card

Infrared radiation calculator is offered free in single copies. It simplifies temperature and energy conversions and lists the basic functions and formulas used in these calculations. It has 20 marked scales for computations; lists of symbols, constants, and equations commonly needed; the emissivities of various industrial materials; and a typical atmospheric transmission spectrum. An Example Problem Guide works through seven case problems. *Sensors, Inc.*

Circle 90 on Reader Service Card

Oil reclamation system is explained in four-page brochure. Petroclar system purifies a wide range of industrial oils, including hydraulic, machine lubricating, cutting, and quenching oils. It removes suspended solid contaminants by filtration, water contamination by evaporation, and dissolved gases and volatile hydrocarbons, without affecting oil chemistry. *Velcon Filters Inc.*

Circle 91 on Reader Service Card

Electrostatic spray guns are described in six-page brochure. Capabilities of airless and air spray equipment are given. Company's new air spray electrostatic system for water-base materials, complete with specialized isolation safety equipment, is presented. *Graco Inc.*

Circle 92 on Reader Service Card

HEALTH SYSTEMS EDUCATOR

Seasoned educator and practitioner sought for health systems academic and research program at associate or full professor rank. Must have:

- Ph.D. in relevant discipline
- Health-related management engineering background
- Familiarity with health systems planning
- Record of creative and productive scholarship
- Skills in developing proposals and attracting support for research projects
- Problem solving research experience
- An interest in both graduate and undergraduate teaching
- Ability to manage interdisciplinary teams
- Professional commitment to the health field

Position to be filled no later than September 1977. Opening also expected at assistant professor level with similar attributes but lesser experience. Send statement of qualifications and interests, resume, and supporting documents to:

Dr. Harold E. Smalley, Director
Program in Health Systems
Georgia Institute of Technology
Atlanta, GA 30332

GEORGIA INSTITUTE OF TECHNOLOGY

ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

(404) 894-4550

CANDIDATE SOLICITATION
FOR NEW FACULTY POSITION

July 1976

The *Program in Health Systems* is seeking to fill a new position on its faculty at the earliest practical date between now and September 1977. This position will be at the associate or full professor rank, with involvement in both academic programs within the College of Engineering and research and outreach programs of the *Health Systems Research Center*, under a single administrative structure.

The position will carry a competitive salary, liberal fringe benefits, and favorable academic working conditions. It will also afford opportunities to engage in challenging and interesting work, to promote professional and technical development, to interface with the real world, and to make contributions toward producing health manpower and improving the nation's health care system. As an equal education and employment opportunity institution, Georgia Tech encourages applications from qualified women and minorities.

The person being sought to fill this position should possess attributes such as the following:

- The Ph.D. degree in a discipline relevant to health systems.
- Professional commitment to the health field.
- Background in health related management engineering.
- Familiarity with health systems planning.
- Expertise in quantitative and analytical techniques.
- Seasoned educator and professional practitioner.
- Bias toward career oriented education.
- Interest in both undergraduate and graduate teaching.
- Record of creative and productive scholarship.
- Bias toward problem-solving applied research.
- Skills in developing proposals and attracting outside support.
- Ability to manage interdisciplinary teams.
- Flexibility in discharging diverse responsibilities.
- Personality for good interpersonal and public relations.
- Potential for future administrative office.

In addition to this senior position, an opening is also expected at the assistant professor level which will call for the same kinds of attributes but with lesser experience.

Persons willing to suggest possible candidates for consideration are asked to send names, addresses, and other pertinent information to:

Dr. Harold E. Smalley, Director
Program in Health Systems
Georgia Institute of Technology
Atlanta, Georgia 30332

Appendix 10: Alumni Placement

GEORGIA INSTITUTE OF TECHNOLOGY

ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERINGALUMNI OF
B.S. CURRICULUM IN HEALTH SYSTEMS

(404) 894-4550

<u>Permanent Home Address</u>	<u>Career Placement</u>
MR. CLAY JENSEN (3/74) 166 Erie Avenue Decatur, Georgia 30033	(Current status unknown)
MR. RICHARD BINION, III (6/74) c/o Richard Binion, Jr. 2040 Grand Prix Drive, N.E. Atlanta, Georgia 30345	Management Engineer Medicus Systems Corporation San Antonio, Texas
MR. REX A HENDERSON (6/74) 847 Temple Terrace Oviedo, Florida 32765	Medical Student School of Medicine University of Miami Miami, Florida
MR. ROBERT P. PAINE (6/74) 808 Cherrywood Road Salem, Virginia 24153	Management Systems Coordinator Hospital Corporation of America King Faisal Specialist Hospital Kingdom of Saudi Arabia
MR. TED L. VANLANDINGHAM (6/74) 1621 Huntington Drive Marietta, Georgia 30062	Lieutenant (JG) Adm. Asst. Naval Regional Medical Center Portsmouth, Virginia
MR. ERNEST N. WILLIAMSON (12/74) 608 Scotts Way Augusta, Georgia 30904	Health Systems Analyst The Medicus Corporation Loyola University Med. Ctr. Chicago, Illinois
MR. R. PATRICK MCQUADE (3/75) 2239 Stratmor Drive Stone Mountain, Georgia 30083	(Current status unknown)
MR. J. CHANDLER BERG (6/75) 1603 Linwood Lane Albany, Georgia	Medical Student School of Medicine Medical College of Georgia Augusta, Georgia
MS. ADRIANA GUTIERREZ (6/75) 7404 Flowers Ave., #1 Takoma Park, MD 20012	Staff Consultant Medicus Corporation 7315 Wisconsin Avenue Washington, D.C.
MR. ARTHUR R. SMITH (6/75) 210 River Springs Drive Atlanta, Georgia 30328	Management Engineer Ohio Management Services Cleveland, Ohio

Alumni of B.S. Curriculum in Health Systems
Page 2

<u>Permanent Home Address</u>	<u>Career Placement</u>
MS. SHERRY B. GETTMANN (8/75) 321 Lakeside Drive Milledgeville, Georgia 31061	Junior Management Engineer Management Engineering Department Grady Memorial Hospital Atlanta, Georgia
MR. MARTY M. MCQUADE (8/75) 2239 Stratmor Drive Stone Mountain, Georgia 30083	(Current status unknown)
MR. PHILLIP H. SCHWARTZ (8/75) 5 Jessamine Place Hilton Head Island, S.C. 29928	Unit Manager Urban Medical Hospital 2540 Windy Hill Road Marietta, Georgia
MR. ROBERT C. STEFFEL (8/75)* 1604 Springbrook Drive Decatur, Georgia 30037	Management Engineer The Medicus Corporation Kingston, Ontario Canada
MR. HALSEY M. BAGG (12/75)* Box 73, RD #3 Oneonta, NY 13823	Management Engineer Rochester General Hospital Rochester, New York
MR. EDWARD M. BRANDENBURG, JR. (12/75) 1210 West 48th Street Richmond, Virginia 23225	Assistant Management Engineer Medical College of Virginia Richmond, Virginia
MR. JAMES G. BUCK (12/75) 90 Woodbrook Drive Stamford, Conn. 06907	Management Engineering Consultant MECCS Princeton, New Jersey
MS. JANIE MACARI (12/75)** 20 Wascussee Lane Stamford, Conn. 06902	Analyst Programmer The Medicus Corporation Atlanta, Georgia
MR. KEVIN M. O'TOOLE (12/75) 300 West Swedesford Rd. Exton, PA 19341 "F"	Traffic Control Dept. Continental Railroad Exton, Pennsylvania
MS. DONNA R. HARRISON (3/76) Rt. 4, Box 468 Tifton, GA 31794	Data Analyst Piedmont Health Systems Agcy. Greensboro, North Carolina

* Received MSHS degree in 1976.

** MSHS degree expected, Sept. 1977

Alumni of B.S. Curriculum in Health Systems
Page 2

<u>Permanent Home Address</u>	<u>Career Placement</u>
MS. SHERRY B. GETTMANN (8/75) 321 Lakeside Drive Milledgeville, Georgia 31061	Junior Management Engineer Management Engineering Department Grady Memorial Hospital Atlanta, Georgia
MR. MARTY M. MCQUADE (8/75) 2239 Stratmor Drive Stone Mountain, Georgia 30083	(Current status unknown)
MR. PHILLIP H. SCHWARTZ (8/75) 5 Jessamine Place Hilton Head Island, S.C. 29928	Unit Manager Urban Medical Hospital 2540 Windy Hill Road Marietta, Georgia
MR. ROBERT C. STEFFEL (8/75)* 1604 Springbrook Drive Decatur, Georgia 30037	Management Engineer The Medicus Corporation Kingston, Ontario Canada
MR. HALSEY M. BAGG (12/75)* Box 73, RD #3 Oneonta, NY 13823	Management Engineer Rochester General Hospital Rochester, New York
MR. EDWARD M. BRANDENBURG, JR. (12/75) 1210 West 48th Street Richmond, Virginia 23225	Assistant Management Engineer Medical College of Virginia Richmond, Virginia
MR. JAMES G. BUCK (12/75) 90 Woodbrook Drive Stamford, Conn. 06907	Management Engineering Consultant MECCS Princeton, New Jersey
MS. JANIE MACARI (12/75) 20 Wascussee Lane Stamford, Conn. 06902	Graduate Student Program in Health Systems Georgia Institute of Technology Atlanta, Georgia
MR. KEVIN M. O'TOOLE (12/75) 300 West Swedesford Rd. Exton, PA 19341 "F"	Traffic Control Dept. Continental Railroad Exton, Pennsylvania
MS. DONNA R. HARRISON (3/76) Rt. 4, Box 468 Tifton, GA 31794	Data Analyst Piedmont Health Systems Agcy. Greensboro, North Carolina

*Received MSHS degree in 1976

Alumni of B.S. Curriculum in Health Systems
Page 3

Permanent Home Address

Career Placement

MS. NANCY PATTILLO GODBOLD (3/76)
1424 W. Pace's Ferry Road
Atlanta, GA 30327

Postgraduate Student
Georgia Tech (ISyE)
Atlanta, Georgia

MR. N.M. ADIELE (6/76)
1425 Euclid Street, NW, Apt. 1
Washington, D.C. 20009

Medical Student
School of Medicine
Howard University
Washington, D.C.

MR. THOMAS W. BARNES, III (6/76)
6082 Ravenswood Drive
Utica, Michigan 48087

Health Systems Analyst
The Medicus Corporation
Akron, Ohio

MS. BARBARA CIESIEL (6/76)
P.O. Box 1289
Lake Havasu City, Arizona 86403

Postgraduate Student
Georgia Tech (ISyE)
Atlanta, Georgia

MR. CRAIG DICKINSON (6/76)
4251 Webb Road
Tucker, GA 30084

Staff Specialist
Center for Hospital Management
Engineering
American Hospital Association
Chicago, Illinois

MS. MARY K. FORD SMITH (6/76)
2788 Defoors Ferry Road, NW, Apt. 19E
Atlanta, GA 30318

Junior Management Engineer
Grady Memorial Hospital
Atlanta, Georgia

MR. HAL W. SANDERS (6/76)
300 Home Park Avenue, Apt. 704
Atlanta, GA 30318

(Current status unknown)

MR. JESSE G. SMITH (6/76)
606 Scotts Way
Augusta, GA 30904

Graduate Student
Dept. of Industrial Engineering
University of Missouri
Columbia, Missouri

MR. CHARLES L. WHITBY, JR. (6/76)
Box 24
Hillsboro, MD 21641

Health Systems Analyst
Division of Systems & Computer Services
Medical College of Georgia
Augusta, Georgia

MS. BETSY I. AQUIN (9/76)
P.O. Box A-531
Panama 9A
Republic of Panama

Graduate Student (MBA)
University of Panama
Republic of Panama

MR. CLAYTON BARNES (9/76)
471 Johnson Ferry Rd.
Atlanta, GA 30328

Youth worker
Youth for Christ
Atlanta, Georgia

Alumni of the B.S. Curriculum in Health Systems
Page 4

<u>Permanent Home Address</u>	<u>Career Placement</u>
MR. MORRIS L. GAVANT (9/76) 1378 Southland Vista St., NE Atlanta, GA 30329	Medical Student School of Medicine Emory University Atlanta, Georgia
MR. DAVID M. LEWIS (9/76) 1103 River Ridge Drive Augusta, GA 30904	Associate Management Engineer Community Systems Foundation Washington, D.C.
MR. HARRY (RUSTY) BROWN (12/76) 2573 Plantation Drive East Point, GA 30344	Management Engineer Crawford W. Long Memorial Hospital Atlanta, Georgia
MR. JOHN DORAN (12/76) 1866 Silver Hill Road Stone Mountain, GA 30087	(Current status unknown)
MS. SYLVIA MARIA SAMRA (12/76) 3332 Northside Drive Hapeville, GA 30354	Systems Engineer Systems Development Department University of Alabama Hospitals Birmingham, Alabama
MR. FRANK E. COFFEY (3/77) 2894 Poplar Street Doraville, GA 30340	Atlanta Tennis Sales & Service (Partner) Atlanta Flea Market Atlanta, Georgia
MS. JANET HARDY (3/77) 842 Bradford Avenue Westfield, N.J. 07090	(Seeking employment in Cincinnati as of July 1977)
MS. ANNE L. ROBISON (3/77) 793 Yorkshire Road, NE Atlanta, GA 303	(Seeking employment in Atlanta as of September 1977)
Ms. CHARLENE O. ZALESKY (3/77) 2454 White's Mill Road Decatur, GA 30032	Systems Consultant (Physicians Practice) Accounting Systems Company, Inc. Fayetteville, GA
MR. JOHN A. HORTON (6/77) 2701 Wellington Drive Augusta, GA 30904	Graduate Student (MSHS) School of Health Systems Georgia Tech Atlanta, Georgia
MR. STEPHEN W. MAHAN (6/77) 2039 Drew Valley Rd. Atlanta, GA 30319	Systems Engineer Systems Development Department University of Alabama Hospitals Birmingham, Alabama

Alumni of the B.S. Curriculum in Health Systems
Page 5

Permanent Home Address

MR. GREGORY S. MATSUNAGA (6/77)
515 Forest Avenue
Fayetteville, GA 30214

MR. HOWARD B. NUSSMAN, JR. (6/77)
4724 Cavan Drive
Stone Mountain, GA 30083

MS. ANITA L. PENDLETON (6/77)
3755 Overlook Drive
Macon, GA 31204

MR. ALLAN F. PLATT (6/77)
1588 Rochelle Drive, NE
Atlanta, GA 30341

MR. JOHN W. WEAVER (6/77)
1633 Pine Street, SE
Marietta, GA 30060

Career Placement

Management Engineer
Oklahoma Management Engineering
Shared Services (Okla. Hosp. Assoc.)
Tulsa, Oklahoma

Graduate Student (MSHS)
School of Health Systems
Georgia Institute of Technology
Atlanta, Georgia

(To be married; seeking employment
in Washington, D.C. as of September
1977)

Medical Student, Physician
Assistant Program (as of 1/78)
Emory University
Atlanta, Georgia

SE Sales Representative
The Carlson SE Corporation (Hospital
Building and Equipment)
Atlanta, Georgia

GEORGIA INSTITUTE OF TECHNOLOGY

ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

ALUMNI OF
MASTER OF SCIENCE IN HEALTH SYSTEMS (MSHS)

(404) 894-4550

Permanent Home Address

Career Placement

MS. SUSAN BAXTER (9/76)
9 Keats Road
Short Hills, New Jersey 07078

Health Planner
Health Planning Council of
Greater Boston
Boston, Massachusetts

MS. DAWN CARRICO (9/76)
2747 Briargrove, #160
Houston, Texas 77027

Management Engineer
The Medicus Corporation
Houston, Texas

MR. DONALD GALIMORE (9/76)
P.O. Box 36216
Cincinnati, Ohio 45236

Management Engineer
The Medicus Corporation
Bethesda Hospital
Cincinnati, Ohio

MR. CLIFFORD GOODMAN (9/76)
1087 Westshire Place, #15
Atlanta, Georgia 30318

Research Associate
Health Systems Research Center
Georgia Institute of Technology
Atlanta, Georgia

MR. ROBERT HAGAN (9/76)
Main Street
New Haven, Kentucky 40052

Associate Health Planner
Minnesota Health Systems Agency Six
Redwood Falls, Minnesota

MR. ROBERT STEFFEL (9/76)
820 Castell Road, Apt. 211
Kingston, Ontario
Canada K7M 5X1

Management Engineer
The Medicus Corporation
Kingston General Hospital
Kingston, Ontario

MR. JAMES TINDALL (9/76)
8275 Berkley Ridge
Dunwoody, Georgia 30338

Manager, Systems Planning
Brookwood Health Services
Birmingham, Alabama

MS. KAREN C. ABORJAILY (12/76)
50 Lowell Avenue
Westfield, Mass. 01085

Management Engineer
The Medicus Corporation
St. Joseph Mercy Hospital
Pontiac, Michigan

MR. HALSEY M. BAGG (12/76)
Box 73, RD #3
Oneonta, NY 13820

Management Engineer
Rochester General Hospital
Rochester, New York

MR. ROGER COCHRAN (12/76)
2305 Nottingham Way, #3
Albany, Georgia 31707

Director of Project Review
Southwest Georgia HSA, Inc.
Albany, Georgia

Alumni of MSHS
Page 2

Permanent Home Address

MR. PHILIP Y. DRAKE (12/76)
Route 4, Box 75
Swainsboro, Georgia 30401

MR. NATHAN KAUFMAN (12/76)
204 S.E. 15th Avenue
Fort Lauderdale, Florida 33301

MR. LESTER DOLLAR (6/77)
194 Meadowood Circle
Decatur, Georgia 30034

Career Placement

Management Engineer
The Medicus Corporation
Akron, Ohio

Health Planner
Health Planning and
Development Council
Fort Lauderdale, Florida

World Student Fund Scholar (7/77 - 7/78)
Swiss Federal Institute of Technology
Zurich, Switzerland

Appendix 11
The Price Gilbert Memorial Library

Georgia Institute of Technology's Price Gilbert Memorial Library is a centralized facility with a seating capacity of 2,000. It contains 878,000 books, periodicals, and serials; 1,000,000 micro-text; and 234,000 other miscellaneous items. Especially strong are its collections in the fields of science, engineering, and management, including abstracts, indexes, and bibliographies in these areas. The Library currently subscribes to 12,000 periodicals and serial titles. Open 100 hours per week, it has a staff of 74 (31 professional librarians, 43 non-professionals--plus 30 EFT student assistants) to serve the Georgia Tech community.

The Library has the largest patent collection south of Washington, D.C., having more than 1,600,000 patents and English abstracts of patents from seven foreign countries. It is also a depository for technical reports, maps, and government documents as it is designated as one of twelve "Federal Scientific Report Centers" in this country. These collections consist of 850,000 reports from the Atomic Energy Commission, Department of Defense, National Aeronautics and Space Administration, and the National Technical Information Service; 315,000 government documents; and 100,000 maps.

The following figures indicate coverage in areas pertinent to health planning:

Medical Economics, Medical Sociology, Public Health, etc.	8,000*	volumes
Bibliographies	2,500	
Psychology	5,000	
Government Documents (paper copy).	6,500	
Technical Reports (microtext).	6,500	

*Including 5,500 journals; 400 journal titles.

Volumes in related areas, including
 operations research, quality control,
 management science, industrial
 engineering. 34,000

The Library has consistently been involved in the use of the latest developments in library technology. For example, it was chosen by the Library of Congress to participate in a pilot project for the use of MARC tapes (machine readable cataloging). In addition, it is a charter member of the Southeastern Library Network (SOLINET). This organization, operational since 1975, is a comprehensive regional library processing system including shared cataloging, serials control, acquisitions, circulation control, and bibliographic information retrieval subsystems.

Another technological feature of the Library is the availability of free computer-based literature searches to the faculty, staff, and students of Georgia Tech. Magnetic tape files are available for search in the fields of biology, education, engineering, psychology, and various other disciplines.

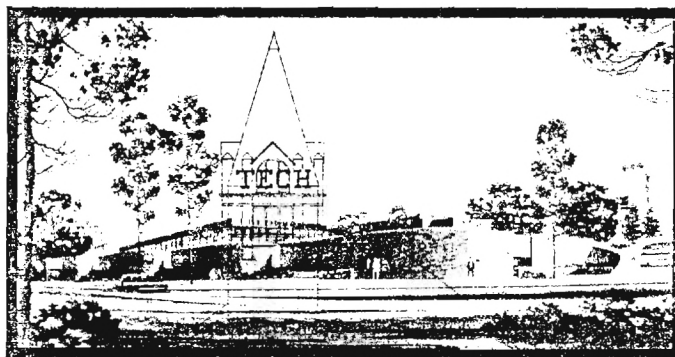
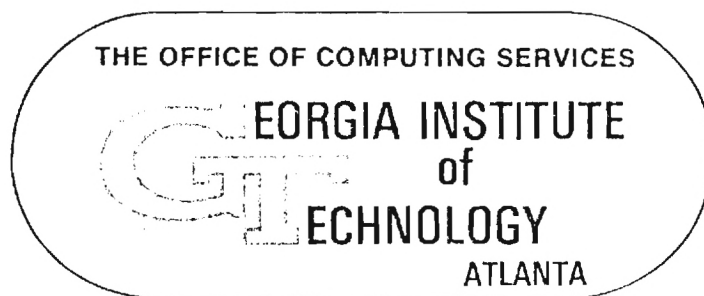
The Library is a member of two statewide library systems: the University System of Georgia, which provides access to all State school libraries, and the University Center in Georgia, which includes non-State schools such as Emory University.

In the public services area, the Information Exchange Center (IED) is responsible for interlibrary loans, photocopying (for both on and off-campus patrons) and services to business, industry, and government agencies. In this capacity last year, the IEC handled over 25,000 transactions. Requests are received by mail, teletype, or telephone. Because of its extensive holdings in engineering, technology, and management, and its past experience in providing library services nationally and internationally, the Library is a participant in several international projects.

Appendix 12
Health Systems Reference Room

As an adjunct to the Price Gilbert Library of the Georgia Institute of Technology, the School of Health Systems and the Health Systems Research Center operate within their own quarters a specialized reference room devoted entirely to the health systems planning and analysis fields. The Reference Room has a collection of approximately 2700 volumes, including books, government documents, and miscellaneous monographs. It subscribes to and retains issues of 18 timely medical care, hospital, and related health systems journals, and maintains files on numerous health systems and hospital association newsletters. For the benefit of faculty, students, and HSRC staff, the Reference Room maintains a file of selected journal articles on a variety of health systems-related topics, classified by subject and cross-referenced by author, title, and subject. The special reference library is open 40 hours per week and is staffed by a full-time research associate and student assistants.

The Reference Room primarily serves Health Systems students, School of Health Systems faculty, and HSRC staff. However, because of the extent of its specialized health systems holdings, and its ability to locate additional outside information and materials, the Reference Room also receives numerous requests for assistance from area health planning agencies, consulting firms, and related organizations.

Appendix 13

COMPUTING SERVICE IN THE PURSUIT OF EXCELLENCE

THE OFFICE OF COMPUTING SERVICES

The Office of Computing Services (OCS) is responsible for the coordination of all computing activities on the Georgia Tech campus. A major function of the Office is the operation of a central facility for providing effective, efficient and conveniently accessible computing services and resources to students, faculty and staff in support of education, research and administration.

OCS was established as a service oriented organization on January 1, 1973, as a result of an extensive institutional self-study effort. Both the organization and the facilities for providing computer services to campus users have evolved continuously since 1955.

The centralized facilities currently consist of a large scale Control Data Corporation CYBER 70-Model 74-28/6400 computer system supported by an extensive program library as well as a comprehensive array of data preparation and conversion equipment which are dedicated to support education, research and institutional administration.

During each quarter, the centralized facilities provide support to approximately 4,000 students enrolled in many courses taught by various schools and departments throughout the Institute. OCS is not responsible for conducting formal classroom instruction for academic credit. However, non-credit seminars and workshops are periodically offered relative to the use of all OCS hardware and software.

Extensive research activities conducted by faculty members and graduate students in the academic schools and departments and the staff of the Engineering Experiment Station are dependent upon the centralized large scale computational capabilities provided through OCS.

An applications staff provides computer oriented information system design and implementation support to the entire campus, particularly to the administration in such areas as financial management, student records and scheduling, physical space inventory and utilization, and in administrative planning.

Organization

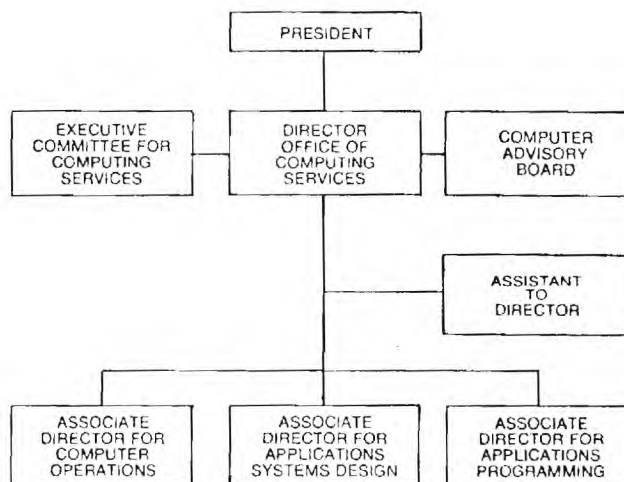
The Director of OCS reports directly to the President of the Institute, but coordinates all policy matters with an Executive Committee for Computing Services and a Computer Advisory Board. The Executive Committee for Computing Services is made up of Institute officials who review and approve policy matters concerning computing at Georgia Tech. The Computer Advisory Board consists of knowledgeable computer users appointed from the faculty, staff and student body. The Board meets regularly with the OCS staff to analyze computing needs and recommend methods for satisfying those needs.

The OCS staff consists of over 60 technical personnel organized into three major divisions as shown in the accompanying chart. The Computer Operations Division of OCS is further organized into four departments and is responsible for managing all operational aspects of the centralized facilities. The User Services Department manages the program library, publishes a newsletter and technical documentation, provides assistance to all users, and conducts tours, seminars, and workshops. The Systems Programming Department

maintains all system software. The Data Processing Department operates all hardware and peripheral equipment. The Engineering Department is responsible for hardware/software design and implementation of configuration changes, and is also responsible for the maintenance of all non-CDC hardware.

The Applications System Design Division of OCS coordinates the design and development of all information systems on the campus.

The Applications Programming Division of OCS coordinates the implementation and operation of campus information systems.



The Centralized Computing Facilities

From 1955 to 1975 a UNIVAC Scientific 1101, an NCR 102D, an IBM 650, a Burroughs 220, a Burroughs B5500, an IBM 360/30 and a UNIVAC 1108 were used to provide computing services. In early 1975 a CDC CYBER 70 Model 74-28/6400 system replaced the UNIVAC 1108 and IBM 360/30 computer systems. The CYBER 74/6400 system operates in a multiprocessing, time-sharing mode to serve the needs of onsite batch, remote batch, and interactive terminal users. The present telecommunications facilities can simultaneously accommodate up to 12 remote batch terminals operating at 2400 to 9600 baud and 80 interactive terminals operating at 110, 300, 134.5 or 1200 baud.

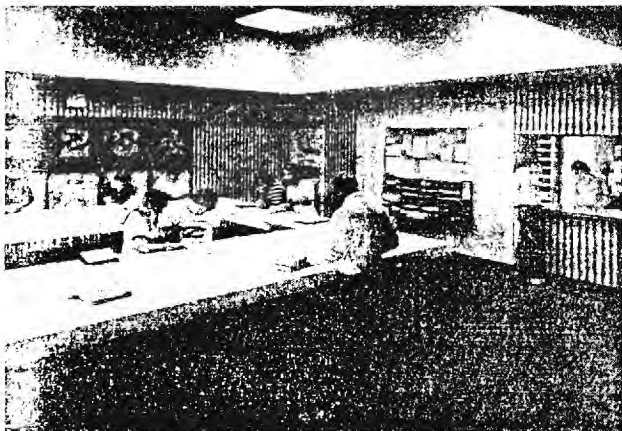
THE NOS Operating system supports a broad variety of programming languages, applications programs, and library subroutines available to both time-sharing, remote batch, and onsite users. The OCS staff which maintains this software is constantly alert to implement enhancements or to acquire additions.

Considerable equipment is maintained at the central site to facilitate utilization of the CYBER 74/6400. An Analog-to-Digital conversion system automatically converts data gathered by a recorder at the site of an experiment to a form acceptable for analysis by the CYBER 74/6400. Calcomp and versatec plotters make

it possible for users to express their results in graphic form. An optical scanner permits the rapid conversion of hand coded data to magnetic tape for computer processing. Key punches, a reproducer, a printer, a sorter, and other tabulating equipment aid in the preparation of computer runs.

Various services are provided by OCS to augment the basic facilities. Professional keypunch service is available to all users. User assistants located adjacent to the user data preparation area can help debug programs or assist with other problems encountered while using OCS services. A User Library is maintained by OCS and contains reference material on the CDC system and the computing industry in general. A hands-on express batch terminal and a cluster of video and hard copy interactive terminals are located at the central facility.

Remote job entry terminals are located in the Business Office and the Registrar's Office to support much of the administrative workload. Other remote job entry terminals are located in the School of Civil Engineering, the Physical Plant, and at Southern Technical Institute.



Input/Output Area

Here, computer users enter and retrieve their batch processing work. The large array of lights on the left is used to indicate when individual jobs are ready for pickup. An automatic telephone answering device provides for current system status and trouble reporting. Job status information is obtained via an on-line video display located in the lobby or by telephoning the I/O attendant. Users can review input/output data at work tables shown in foreground of photograph.



Data Preparation Area

In this area, users make corrections or prepare data or program cards on any of the twelve keypunch machines, and assemble their decks for resubmission. Programming assistance is available from the User Services Department staff in the adjacent offices. Professional keypunch services are also available.



Interactive Terminal Cluster

In addition to about 150 interactive terminals financed by and located in the various schools and departments, OCS provides a cluster of 10 hard copy and 10 CRT devices for all time-sharing users. These devices are installed in sound controlled carrels conveniently located adjacent to User Services consultants and necessary documentation.



Express Batch Terminal

A large majority of all batch jobs are short enough to be run from this express terminal located in the lobby. Users read in their own cards at the rate of 600 cards per minute and then a few minutes later remove their own output from a 600 line per minute printer.



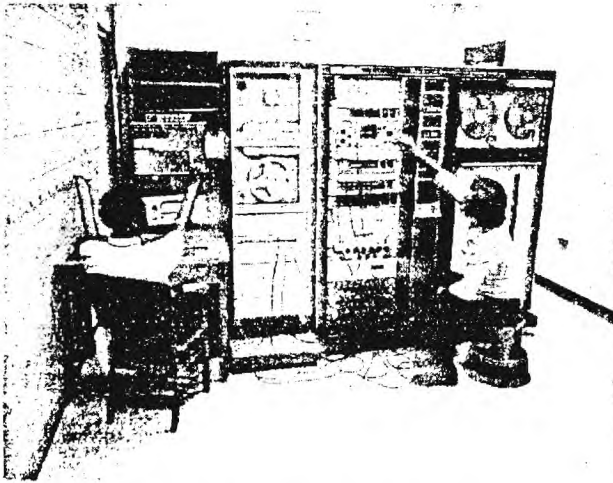
Peripheral Equipment

This area contains a sorter, collator, reproducing punch, tabulating machine, interpreter, card-to-paper tape, and paper tape-to-card machines. It is available to all users on an open shop basis.



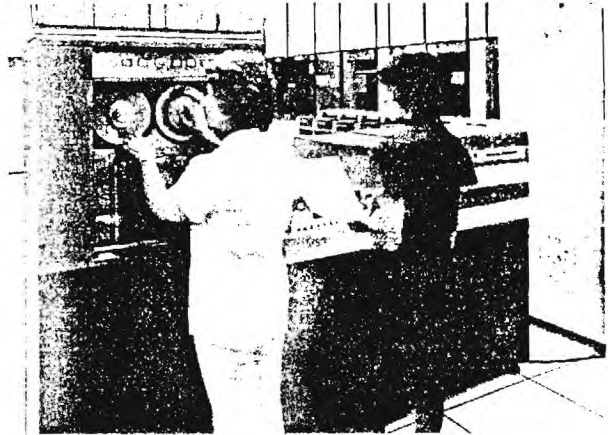
CYBER 74/6400 Hardware Configuration

- 3 Central Processing Units, one with multiple functional units and two with unified arithmetic units. Together, the CPU's can issue 4.7 million instructions per second.
- 24 Peripheral Processing Units, each with 4096 words of core memory (12 bits per word).
- 12 Central Memory core modules, 16,384 words each, with a total of 196,608 words (60 bits per word).
- 11 844-21 Disk Storage Units, with a total capacity of 7.8 billion bits (1298 million characters) and a transfer rate of 6.8 million bits per second, connected through 4 Mass Storage Controllers.
- 4 844-41 Disk Storage Units with a total capacity of 5.7 billion bits (948 million characters) and a transfer rate of 1.075 million characters per second, connected through the same 4 Mass Storage Controllers as the 844-21 units.
- 6 669-4 nine track magnetic tape transports, with a maximum transfer rate of 320,000 characters per second.
- 4 669-2 nine track magnetic tape transports with a maximum transfer rate of 160,000 characters per second.
- 2 667-4 seven track magnetic tape transports, with a maximum transfer rate of 160,000 characters per second.
- 2 405 Card Readers, 1200 cards per minute.
- 1 415 Card Punch, 250 cards per minute.
- 3 512-1 Line Printers, up to 1150 lines per minute, one with a full ASCII print train.
- 1 6676 Data Set Controller, handling 64 asynchronous lines up to 300 baud.
- 3 6671 Data Set Controller, handling 16 synchronous or asynchronous lines up to 9600 baud.



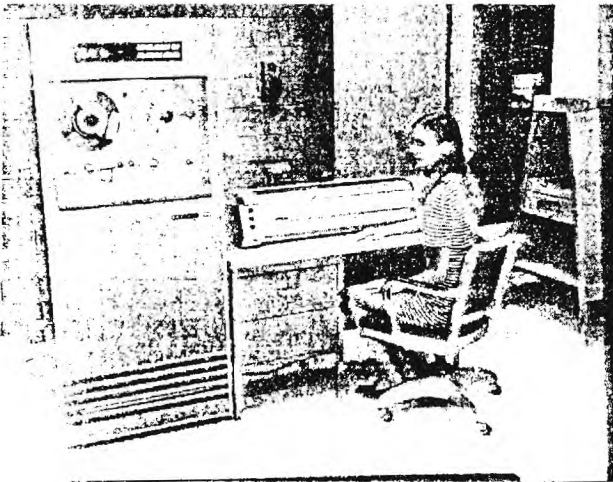
Analog-to-Digital Conversion System

The system multiplexes up to 16 channels of analog input in a sequence determined by a programmable scanner, digitizes the samples at a rate up to 50,000 samples per second and to an accuracy of 11 bits plus sign, and produces an output digital magnetic tape for subsequent processing and analysis on the CYBER 74/6400.



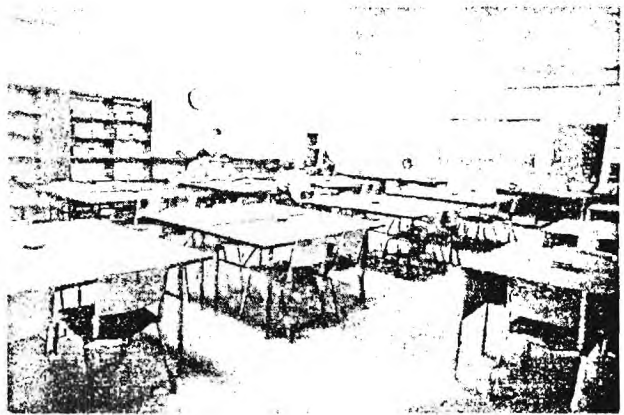
Optical Scanner

An Opscan Model 70 reads pencil marks on predesigned 8½" by 11" source documents, containing alphabetic and numeric information, at a rate of 1,000 sheets per hour. The data are automatically transferred to magnetic tape for subsequent computer processing. To insure accuracy and avoid ambiguity, the system incorporates the "darkest mark" feature, ignoring erasures, smudges, and extraneous marks on the form.



Calcomp Digital Plotter System

This system consists of a Model 763 Digital Incremental Plotter and a Model 770 Magnetic Tape Drive. The Incremental Plotter has a resolution of .0025 inches and produces high quality plots on plain or preprinted paper in sizes up to 30 inches wide by 120 feet long. Software is available on the CYBER 74/6400 for producing plotter instructions on magnetic tape for off-line plotting.



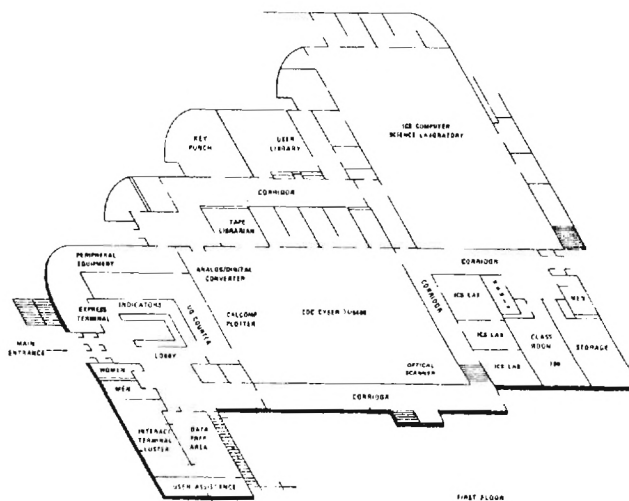
User Library

The User Library contains various documents such as programming language manuals, reference manuals, program library manuals and listings, system software listings, peripheral equipment operation manuals, literature describing the current procedures for obtaining and using the services of the centralized facilities, various computing center newsletters, and other pertinent literature of current interest to users. Maintained in the Computer Center environment, it is a popular study and reference area for students.

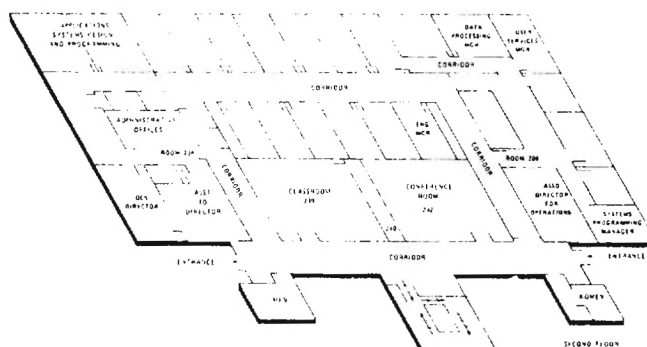
Location

The office of Computing Services is located in the Rich Building on the corner of Campus and Research Drives adjacent to the Hinman Building. This structure was completed in late 1972 at a cost of just over two million dollars. A sketch below shows the general layout of work areas within this fine facility.

First Floor



Second Floor



Operating Hours

The Computer Center facility operating hours have been established to permit optimum availability for student and faculty users. The center is currently open twenty hours per day, Monday through Friday, ten hours on Saturday, and ten hours on Sunday.

Appendix 14: Textbooks for Health
Systems Courses

<u>Course Number</u>	<u>Textbook(s)</u>
HS 2011	Silver, George. <u>A Spy in the House of Medicine</u> . Germantown, Md.: Aspen Publishing Co., 1976, 308 pp.
HS 3011	Champion, John M. <u>General Hospital: A Model</u> . Baltimore: University Park Press, 1976, 251 pp. <u>Readings for HS 3011</u> . Atlanta: Program in Health Systems, Georgia Institute of Technology, 1977, 91 pp.
HS 3021	<u>Readings for HS 3021</u> . Atlanta: Program in Health Systems, Georgia Institute of Technology, 1977, 324 pp.
HS 3111	Barnes, Ralph M. <u>Motion and Time Study: Design and Measurement of Work</u> . New York: John Wiley & Sons, 1968, 799 pp.
HS 3121	No text. Selected readings from supplementary texts and from the current literature (on reserve).
HS 3211	<u>Comprehensive Hospital Computer Applications Program: Volume I, A Guide to Automation for Hospital Administration</u> . Rockledge, Fl.: Eugene Wuesthoff Memorial Hospital for NCHSR&D, 1972, 322 pp.
HS 3332	Berman, Howard J. and Lewis E. Weeks. <u>Financial Management of Hospitals</u> . Ann Arbor: Bureau of Hospital Administration, School of Public Health, University of Michigan, 1971, 386 pp.
HS 3341	Bergwall, David, Philip N. Reeves, and Nina B. Woodside. <u>Introduction to Health Planning</u> . Washington: Information Resources Press, 1974, 221 pp.
HS 3351	Leedy, P. D. <u>Practical Research--Planning and Design</u> . New York: MacMillan Publishing Co., 1974, 246 pp. <u>Field Training Manual</u> . Atlanta: Program in Health Systems, Georgia Institute of Technology, 1976, 63 pp. <u>Field Training Reports</u> . Atlanta: Program in Health Systems, Georgia Institute of Technology, 1977, 60 pp.

<u>Course Number</u>	<u>Textbook(s)</u>
HS 3780	No text. Extensive list of readings selected by participating faculty members kept on reserve.
HS 3971-2-3	No text. References tailored to individual projects to be provided.
HS 4021	<u>Readings for HS 4021.</u> Atlanta: School of Health Systems, Georgia Institute of Technology, 1977, 206 pp.
HS 4131	No text. Selected readings from supplementary texts and from the current literature are placed on reserve.
HS 4141	Allen, Rex W. and Ilona Von Karoly. <u>Hospital Planning Handbook.</u> New York: John Wiley & Sons, 1976, 242 pp.
HS 4351	No text. Selected readings are placed on reserve, and case studies are assigned from supplementary texts and the current literature.
HS 4570	<u>Field Training Manual.</u> Atlanta: Program in Health Systems, Georgia Institute of Technology, 1976, 60 pp.
HS 4571-2-3	<u>Field Training Manual.</u> Atlanta: Program in Health Systems, Georgia Institute of Technology, 1976, 60 pp. <u>Field Training Reports.</u> Atlanta: Program in Health Systems, Georgia Institute of Technology, 1977, 60 pp.
HS 4692-3	No text--handouts by seminar speakers.
HS 4765	Griffith, John R. <u>Quantitative Techniques for Hospital Planning and Control.</u> Lexington, Mass.: Lexington Books, 1972, 403 pp.
HS 4861-2-3	No text. Readings tailored to the subject matter of the particular topic for the quarter.
HS 6001	Silver, George A. <u>A Spy in the House of Medicine.</u> Germantown, Md.: Aspen Publishing Co., 1976, 308 pp.
HS 6231	Taylor, W. J. and T. F. Watling. <u>Practical Project Management.</u> New York: Halsted Press, John Wiley & Sons, 1973, 198 pp. (Note: Above text now out of print; search for new text in progress.)
HS 6331	Griffith, John R. <u>Quantitative Techniques for Hospital Planning and Control.</u> Lexington, Mass.: Lexington Books, 1972, 403 pp.

<u>Course Number</u>	<u>Textbook(s)</u>
HS 6332	Krizay, John and Andrew Wilson. <u>The Patient as Consumer</u> . Lexington, Mass.: Lexington Books, 1974, 231 pp.
HS 6333	LaPatra, J. W. <u>Health Care Delivery Systems</u> . Springfield, Ill.: Charles C Thomas, Publisher, 1976, 358 pp.
HS 6340	No text. Readings are assigned from the current literature and from supplementary texts on reserve.
HS 6341	Blum, Henrik. <u>Planning for Health</u> . New York: Human Sciences Press, 1974, 622 pp.
HS 6351	Nachmias, David and Chava. <u>Research Methods in the Social Sciences</u> . New York: St. Martin's Press, 1976, 335 pp.
HS 6570	<u>Field Training Manual</u> . Atlanta: Program in Health Systems, Georgia Institute of Technology, 1976, 63 pp.
HS 6571-2-3	<u>Field Training Manual</u> . Atlanta: Program in Health Systems, Georgia Institute of Technology, 1976, 63 pp. <u>Field Training Reports</u> . Atlanta: Program in Health Systems, Georgia Institute of Technology, 1977, 60 pp.
HS 6765	Shuman, L. J., R. D. Speas, Jr., and J. P. Young (eds.). <u>Operations Research in Health Care</u> . Baltimore: The Johns Hopkins University Press, 1975, 433 pp.
HS 7000	No text.
HS 7765	No text. References tailored to individual projects to be provided.
HS 8092-3	No text. Handouts by speakers.
HS 8161-2-3	No text. Tailored to the subject matter of the particular topic for the quarter.
HS 8971-2-3	No text. References tailored to individual projects.

Appendix 15

EVALUATION QUESTIONNAIRE FOR INSTRUCTORS

COURSE NUMBER _____

QUARTER _____, 19____

The purpose of this questionnaire is to help improve instruction. Indicate your rating on each of the scaled items by a check (✓) at the appropriate point on the scale. If you feel that you have no basis for a rating on a particular characteristic, simply omit that item.

I. GENERAL CONDUCT AND ORGANIZATION OF THE COURSE

1. Level of presentation

Too Low				Too High			

2. Organization of course material.

Poor				Excellent			

3. Rate of coverage.

Too Slow				Too Fast			

4. Use of examples.

Too Few				Too Many			

II. HOMEWORK

1. Quantity required.

Too Little				Too Much			

2. Average difficulty of assignments.

Too Easy				Too Hard			

3. Benefit of homework in learning the material.

None				Very Helpful			

4. Review by instructor

None				Thorough			

III. QUIZZES

1. Number.

Too Few				Too Many			

2. Were the questions representative of material covered?

Never				Always			

3. Length.

Too Short				Too Long			

4. Were they returned within a reasonable time?

Never				Always			

5. Did quiz grades truly reflect your performances on quizzes?

Never				Always			

EVALUATION QUESTIONNAIRE FOR INSTRUCTORS

IV. INSTRUCTOR-STUDENT RELATIONSHIPS

1. Did instructor encourage student participation in class?

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
 Never Always

2. Did he stimulate thinking.

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
 Dull Stimulating

3. Did he tend to belittle students.

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
 Very often Never

4. Could you communicate with the instructor?

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
 Not at all Very well

5. Was he readily available for help outside of class?

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
 Never Always

6. Was he fair and impartial in his dealings with students?

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
 Unfair Fair

V. MISCELLANEOUS

1. Did the instructor display any annoying mannerisms of speech or other behavior which distracted you in class? _____ If so, please describe.

2. Please feel free to comment in this space on other characteristics or aspects of the instructor of course.

 VI. OVERALL RATING

Please give your opinion of the instructor's overall teaching effectiveness. Circle the appropriate description:

VERY BAD POOR FAIR GOOD VERY GOOD EXCELLENT

Appendix 16
National Advisory Committee

MEETING AGENDA

March 7-8, 1977*

MONDAY, MARCH 7

10:00	<u>Introductions and Opening Remarks.</u> Smalley
10:10	<u>Welcome.</u> Crawford
10:20	<u>Georgia Tech and the Health Systems Research Center.</u> . . Stelson
10:30	<u>The College of Engineering and the Program</u> <u>in Health Systems</u> Sangster
10:40	<u>Status of the Program.</u> Smalley a. General Overview b. Changes Under Consideration (School Status) c. Faculty Recruitment
11:10	<u>Review of BS Curriculum Activities</u> Sayford a. Curriculum Changes and Course Developments. Sayford b. Options: Engineering and Pre-Med Myrick c. Field Training Arrangements and Projects. Thomason
12:10	<u>Lunch</u>
1:30	<u>Review of MSHS Curriculum Activities</u> Kay a. Applicants' Eligibility, Background and Review. Kay b. Curriculum Overview Kay c. Field Training Arrangements and Projects. Fagin d. Financial Support for Students (Sponsored Externships, GRA's, Traineeships) Myrick
2:45	<u>Coffee Break</u>
3:00	<u>Health Planning Options--BS and MSHS Programs.</u> Goodman a. Pre-proposal Activities and Proposal Approval b. Review of Project Activities c. Course Development and Curricula Changes
4:00	<u>AIIE-HSD Committee on Academic Programs.</u> Smalley
5:00	<u>Recess</u>

*The meeting will be held in Room 359 of the Fred B. Wenn Student Center located on First Street on the Tech Campus.

TUESDAY, MARCH 8

9:00	<u>Evaluation Activities</u>	Pittman
	a. <u>Internal Activities</u>	Sayford
	b. <u>External Activities</u>	Pittman
10:30	<u>Coffee Break</u>	
10:45	<u>Evaluation Activities (continued)</u>	Pittman
11:15	<u>Publicity and Promotion</u>	Bailey and Kay
12:00	<u>Lunch</u>	
1:30	<u>Placement of Graduates</u>	Bailey and Myrick
2:15	<u>Accreditation Activities</u>	Myrick and Goodman
2:45	<u>Future Role of NAC</u>	Pittman
3:00	<u>Adjournment</u>	

Appendix 17: Alumni and Employer Questionnaires

Included in this appendix are the questionnaires that were distributed to selected alumni of the Program and to the employers of those alumni who were, or had been, employed in a permanent, full-time, health-related position for at least three months. The questionnaire distributed to those alumni meeting the desired employment criteria is shown as Questionnaire A; the employers of these alumni received Questionnaire B; and alumni not meeting the desired employment criteria received Questionnaire C.

GEORGIA INSTITUTE OF TECHNOLOGY
ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

(404) 894-4550

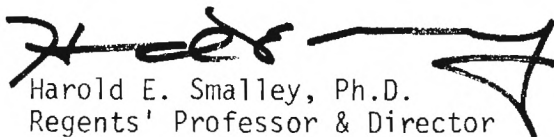
17 November 1976

As one of the requirements of the federal grant that enabled us to establish the Program in Health Systems in 1972, a formal evaluation of our curricula and courses is now in progress. An important part of this evaluation calls for your views on the value of the education you received at Georgia Tech and the extent to which your courses at Tech prepared you for your job after graduation.

I am asking that you respond to the enclosed questionnaire which has been designed to acquire the information we need, while minimizing your time and trouble. Please take the few minutes required to complete the questionnaire and return it to us in the stamped, pre-addressed envelope provided for your convenience; our deadline is 15 December 1976.

Your opinions and experiences are important in finding ways of improving Health Systems at Georgia Tech, and we earnestly solicit your participation. Thanks so much.

Sincerely,


Harold E. Smalley, Ph.D.
Regents' Professor & Director

10

Enclosure

GEORGIA INSTITUTE OF TECHNOLOGY
ATLANTA, GEORGIA 30332PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERINGEVALUATION QUESTIONNAIRE
(HS ALUMNUS)

(404) 894-4550

This questionnaire is designed to obtain your opinion on various aspects of the Program in Health Systems. Information obtained from questionnaire respondents will be used in an aggregate sense only, thus preserving anonymity of responses. Individual responses will be seen only by appropriate members of the Health Systems (HS) faculty and staff. If you have any questions about the questionnaire, or the evaluation in general, please call 404-894-4550 collect and ask for Mr. Julian Pittman. Your cooperation is greatly appreciated.

* * * * *

General Instructions

Following the biographical information requested in the next section are several sections containing various statements or questions about which you are asked to express your opinions or feelings. To standardize this procedure, most of the statements and questions are accompanied by a five-point scale on which you are asked to indicate your answer. Although the specific terms associated with each scale may vary to "fit" a particular question or statement, the scales are basically of two types, both ranging from 1 to 5.

The following scale is typical of those accompanying *questions* about which you are asked to indicate your feelings:

None at all 1 2 3 4 5 Very Much

On this type scale, a "1" indicates "none" and a "5" means "very much." A "3" in this case indicates a moderate amount between "none" and "very much."

Typifying the scales accompanying *statements* is the following:

Strongly Disagree 1 2 3 4 5 Strongly Agree

On this scale, "3" can be considered as indicating "neutral" or no definite feelings about the statement. Numbers less than "3" indicate varying levels of disagreement, with "1" indicating the strongest disagreement. Similarly, numbers higher than "3" indicate varying levels of agreement, with "5" representing the strongest agreement.

Following are two examples:

Instructions: Circle the number that best reflects how you feel.

Question: How much of what is available for viewing on television is beneficial from an educational point of view?

None at all 1 (2) 3 4 5 Very Much

Statement: The earth is flat.

Strongly Disagree 1 2 3 4 (5) Strongly Agree

The individual answering "2" in the *question* above feels that little of educational benefit is prevalent in the available programs on TV. The respondent circling "5" for the *statement* above has apparently never crossed the Rocky Mountains nor heard of the exploits of Christopher Columbus.

It should be noted that *there are no right or wrong answers*. In each instance, you should mark the answer which you think best reflects how you feel or what you think. Some questions or statements require an indication of your opinion as it relates to your job, while others seek your feelings on matters of a more general nature. Please respond accordingly. In those instances in which questions or statements pertain to your job, please respond in relation to the first permanent, full-time health-related position that you occupied for a period longer than three months. (You will be asked to specify this position on one of the following pages.) In every instance, be sure to mark an answer. Please do not leave any question or statement unanswered, and feel free to make any additional comments regarding the questionnaire or the Program in Health Systems in general on the margins or on the back of any of the following pages.

SECTION 1--BIO

PRESENT OCCUPATION: _____

EDUCATION:

	Institution	Major	Degree	Date Received
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____

EMPLOYMENT: Please complete the following information for each full-time, health-related position that you have held since your graduation from the Program in Health Systems. (Start with your initial health-related position, and continue in chronological order to your most recent health-related position.)

1. First Position

Name of Organization: _____

Address: _____

Name and Title of Your Administrative Superior: _____

Name and Title of Your Technical or Professional Supervisor: _____

Dates Employed: from _____ to _____
month year month year

Title of Position: _____

Primary Responsibility: _____

2. Second Position

Name of Organization: _____

Address: _____

Name and Title of Your Administrative Superior: _____

Name and Title of Your Technical or Professional Supervisor: _____

Dates Employed: from _____ to _____
month year month year

Title of Position: _____

Primary Responsibility: _____

3. Present or Most Recent Position

Name of Organization: _____

Address: _____

Name and Title of Your Administrative Superior: _____

Name and Title of Your Technical or Professional Supervisor: _____

Dates Employed: from _____ to _____
month year month year

Title of Position: _____

Primary Responsibility: _____

4. Indicate which of the health-related positions above meets (or comes closest to) the desired criteria of being your first permanent, full-time position that you occupied for a period longer than three months by circling the appropriate number below. (Remember to respond to the appropriate statements and questions in relation to that position.)

1 2 3

5. Salary (Optional)

Please indicate both (a) the approximate annual salary you received upon entering your first health-related position and (b) your current salary by checking the appropriate space in each column listed on the following page.

(a) Initial Salary

___ less than \$10,000
 ___ \$10,000-\$11,999
 ___ \$12,000-\$13,999
 ___ \$14,000-\$15,999
 ___ \$16,000-\$17,999
 ___ \$18,000-\$19,999
 ___ \$20,000-\$21,999
 ___ \$22,000 and above

(b) Current Salary

___ less than \$10,000
 ___ \$10,000-\$11,999
 ___ \$12,000-\$13,999
 ___ \$14,000-\$15,999
 ___ \$16,000-\$17,999
 ___ \$18,000-\$19,999
 ___ \$20,000-\$21,999
 ___ \$22,000 and above

6. Are you planning to work in the health systems field in the future?

Yes _____

No _____

Uncertain _____

SECTION 2--JF

1. To what extent has the knowledge you acquired in the Program facilitated your ability to perform your job?

Not at all 1 2 3 4 5 Very Much

2. To what extent did your field training experience facilitate your ability to perform your initial health systems job?

Not at all 1 2 3 4 5 Very Much

3. How much confidence do you have, as a result of your educational experience, in your ability to recognize problems and structure solutions?

None at all 1 2 3 4 5 Very Much

4. To what extent have your efforts resulted in reducing costs, or increasing revenue, in the operation of your organization?

Not at all 1 2 3 4 5 Very Much

5. To what extent have your efforts increased the efficiency of your organization's delivery of services?

Not at all 1 2 3 4 5 Very Much

6. To what extent is your position as a health systems practitioner justified from the standpoint of cost-benefit?

Not at all 1 2 3 4 5 Very Much

7. How satisfied is your employer with the quality of your work?

Not at all 1 2 3 4 5 Very Much

8. How satisfied are you with the quality of your work?

Not at all 1 2 3 4 5 Very Much

9. To what extent are you satisfied with your decision to pursue a career in the health systems field?

Not at all 1 2 3 4 5 Very Much

10. How satisfied are you with the general working atmosphere of your organization?

Not at all 1 2 3 4 5 Very Much

11. How much potential is there for your advancement in your organization?

None at all 1 2 3 4 5 Very Much

12. My superiors are very interested in my recommendations and plans.

Strongly Disagree 1 2 3 4 5 Strongly Agree

13. My health systems talents are utilized to influence major policy decisions rather than minor operational problems.

Strongly Disagree 1 2 3 4 5 Strongly Agree

14. My organization utilizes the systems approach when addressing a problem.

Strongly Disagree 1 2 3 4 5 Strongly Agree

SECTION 3--C

- Following are selected subject areas and techniques that are covered in the Program in Health Systems. For each one, please indicate both (a) the extent of your educational preparation in that area, and (b) the utility of that subject matter in your actual work. (A response of "1" indicates no preparation and no utility while a "5" indicates maximum preparation and maximum utility.)

	<u>Subject Areas</u>	<u>Preparation</u>					<u>Utility</u>				
1-2	Accounting	1	2	3	4	5	1	2	3	4	5
3-4	Economics	1	2	3	4	5	1	2	3	4	5
	Health Systems										
5-6	a. General Orientation to the Health Field	1	2	3	4	5	1	2	3	4	5
7-8	b. Health Issues, Problems and Needs	1	2	3	4	5	1	2	3	4	5
9-10	c. Hospital Functions and Organization	1	2	3	4	5	1	2	3	4	5
11-12	d. Non-hospital Components of the Health Care System	1	2	3	4	5	1	2	3	4	5
13-14	e. Health Systems Analysis Techniques	1	2	3	4	5	1	2	3	4	5
15-16	Information Systems	1	2	3	4	5	1	2	3	4	5
17-18	Probability and Statistics	1	2	3	4	5	1	2	3	4	5
19-20	Psychology and Sociology	1	2	3	4	5	1	2	3	4	5
	<u>Techniques</u>										
21-22	Computer Programming and Data Processing	1	2	3	4	5	1	2	3	4	5
23-24	Engineering Economy and Economic Decision-making	1	2	3	4	5	1	2	3	4	5
25-26	Cost Accounting	1	2	3	4	5	1	2	3	4	5

<u>Techniques</u>		<u>Preparation</u>					<u>Utility</u>				
27-28	Health Facility Planning	1	2	3	4	5	1	2	3	4	5
29-30	Facility Layout	1	2	3	4	5	1	2	3	4	5
31-32	Materials Handling	1	2	3	4	5	1	2	3	4	5
33-34	Mathematical Modeling	1	2	3	4	5	1	2	3	4	5
35-36	Optimization Methods	1	2	3	4	5	1	2	3	4	5
37-38	Forecasting	1	2	3	4	5	1	2	3	4	5
39-40	Inventory Management and Control Techniques	1	2	3	4	5	1	2	3	4	5
41-42	Job Analysis and Evaluation Techniques	1	2	3	4	5	1	2	3	4	5
43-44	Manpower Scheduling	1	2	3	4	5	1	2	3	4	5
45-46	Work Scheduling	1	2	3	4	5	1	2	3	4	5
47-48	Methods Analysis and Work Simplification	1	2	3	4	5	1	2	3	4	5
49-50	Time Study	1	2	3	4	5	1	2	3	4	5
51-52	Work Sampling	1	2	3	4	5	1	2	3	4	5
53-54	Standard Data	1	2	3	4	5	1	2	3	4	5
55-56	Predetermined Motion Times	1	2	3	4	5	1	2	3	4	5
57-58	Descriptive Statistics	1	2	3	4	5	1	2	3	4	5
59-60	Estimation and Hypothesis Testing	1	2	3	4	5	1	2	3	4	5
61-62	Bivariate Analysis	1	2	3	4	5	1	2	3	4	5
63-64	Multivariate Analysis	1	2	3	4	5	1	2	3	4	5
65-66	Project Management Techniques	1	2	3	4	5	1	2	3	4	5
67-68	Quality Control	1	2	3	4	5	1	2	3	4	5
69-70	Simulation	1	2	3	4	5	1	2	3	4	5
71-72	Queuing Theory	1	2	3	4	5	1	2	3	4	5
73-74	Staffing	1	2	3	4	5	1	2	3	4	5
75-76	Systems Analysis	1	2	3	4	5	1	2	3	4	5
77-78	Decision Theory	1	2	3	4	5	1	2	3	4	5

- For each of the following types of managerial problems, please estimate both (a) the extent of your educational preparation in addressing that type of problem, and (b) the usefulness of some prior exposure in an academic setting to that problem area in meeting the actual requirements of your job.

<u>Managerial Problems</u>		<u>Preparation</u>					<u>Utility</u>				
79-80	Improving Work Methods	1	2	3	4	5	1	2	3	4	5
81-82	Management of Information	1	2	3	4	5	1	2	3	4	5

Questionnaire A

	<u>Managerial Problems</u>	<u>Preparation</u>	<u>Utility</u>
83-84	Job Analysis and Evaluation	1 2 3 4 5	1 2 3 4 5
85-86	Employee Motivation and Compensation	1 2 3 4 5	1 2 3 4 5
87-88	Anticipating Future Requirements	1 2 3 4 5	1 2 3 4 5
89-90	Inventory Management and Control	1 2 3 4 5	1 2 3 4 5
91-92	Facilities Design and Space Utilization	1 2 3 4 5	1 2 3 4 5
93-94	Costing and Economic Evaluation	1 2 3 4 5	1 2 3 4 5
95-96	Resource Allocation	1 2 3 4 5	1 2 3 4 5
97-98	Staffing and Scheduling	1 2 3 4 5	1 2 3 4 5
99-100	Personnel Administration	1 2 3 4 5	1 2 3 4 5
101-102	Planning Health Facilities	1 2 3 4 5	1 2 3 4 5
103-104	Financial Management and Control	1 2 3 4 5	1 2 3 4 5
105-106	Project Management	1 2 3 4 5	1 2 3 4 5
107-108	Cost Containment	1 2 3 4 5	1 2 3 4 5
109-110	Compliance with Regulatory Requirements	1 2 3 4 5	1 2 3 4 5

111 The majority of useful information obtained from the Program was obtained in the classroom setting.

Strongly Disagree 1 2 3 4 5 Strongly Agree

112 My field training was very helpful as an introduction to the practical application of knowledge and techniques gained in Health Systems courses.

Strongly Disagree 1 2 3 4 5 Strongly Agree

113 Are there any subject areas and/or techniques and/or managerial problem areas not covered in the Program in Health Systems that you feel should have been covered?

Yes_____ No_____

If "Yes," please describe them.

SECTION 4--GIMP

1. In general, how satisfied were you with the education provided to you by the Program in Health Systems?

Not at all 1 2 3 4 5 Very Satisfied

2. To what extent do you feel the Program in Health Systems prepared you for your health systems career?

Not at all 1 2 3 4 5 Very Much

3. Based upon impressions you developed during your health systems educational preparation, to what extent was the health field environment similar to your expectations of it?

Not at all 1 2 3 4 5 Very Much

4. Do you feel that the faculty of the Program in Health Systems was attuned to contemporary issues in the field of health systems?

Not at all 1 2 3 4 5 Very Much

5. To what degree did Program personnel assist you in obtaining your initial health systems job?

Not at all 1 2 3 4 5 Very Much

6. From your present knowledge of the health field, to what extent do you discern a need for health systems practitioners?

None at all 1 2 3 4 5 Very Great

7. How great do you believe the demand will be for health systems practitioners within the next five years?

None at all 1 2 3 4 5 Very Great

GEORGIA INSTITUTE OF TECHNOLOGY

ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

(404) 894.4550

17 November 1976

I am writing to you as a person who has served as an employer or superior officer of one of our graduates and hence is in a position to provide valuable information we presently need.

As one of the requirements of the federal grant that enabled us to establish the Program in Health Systems in 1972, a formal evaluation of our curricula and courses is now in progress. An important part of this evaluation calls for your views on the extent to which this graduate's education at Georgia Tech prepared him for the health systems position he occupied in your organization and also your assessment of his performance in that position.

I am asking that you respond to the enclosed questionnaire which has been designed to acquire the information we need, while minimizing your time and trouble. Please take the few minutes required to complete the questionnaire and return it to us in the stamped, pre-addressed envelope provided for your convenience; our deadline is 15 December 1976.

Your opinions and experiences are important in finding ways of improving Health Systems at Georgia Tech, and we earnestly solicit your participation. Thanks so much.

Sincerely,

Harold E. Smalley, Ph.D.
Regents' Professor & Director

10

Enclosure

GEORGIA INSTITUTE OF TECHNOLOGY
ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

EVALUATION QUESTIONNAIRE
(SUPERVISOR)

(404) 894-4550

This questionnaire is designed to obtain your opinion on various aspects of the Program in Health Systems. Information obtained from questionnaire respondents will be used in an aggregate sense only, thus preserving anonymity of responses. Individual responses will be seen only by appropriate members of the Health Systems (HS) faculty and staff. If you have any questions about the questionnaire, or the evaluation in general, please call 404-894-4550 collect and ask for Mr. Julian Pittman. Your cooperation is greatly appreciated.

* * * * *

General Instructions

Following the biographical information requested in the next section are several sections containing various statements or questions about which you are asked to express your opinions or feelings. To standardize this procedure, most of the statements and questions are accompanied by a five-point scale on which you are asked to indicate your answer. Although the specific terms associated with each scale may vary to "fit" a particular question or statement, the scales are basically of two types, both ranging from 1 to 5.

The following scale is typical of those accompanying *questions* about which you are asked to indicate your feelings:

None at all 1 2 3 4 5 Very Much

On this type scale, a "1" indicates "none" and a "5" means "very much." A "3" in this case indicates a moderate amount between "none" and "very much."

Typifying the scales accompanying *statements* is the following:

Strongly Disagree 1 2 3 4 5 Strongly Agree

On this scale, "3" can be considered as indicating "neutral" or no definite feelings about the statement. Numbers less than "3" indicate varying levels of disagreement, with "1" indicating the strongest disagreement. Similarly, numbers higher than "3" indicate varying levels of agreement, with "5" representing the strongest agreement.

Questionnaire B

Following are two examples.

Instructions: Circle the number that best reflects how you feel.

Question: How much of what is available for viewing on television is beneficial from an educational point of view?

None at all 1 (2) 3 4 5 Very Much

Statement: The earth is flat.

Strongly Disagree 1 2 3 4 (5) Strongly Agree

The individual answering "2" in the *question* above feels that little of educational benefit is prevalent in the available programs on TV. The respondent circling "5" for the *statement* above has apparently never crossed the Rocky Mountains nor heard of the exploits of Christopher Columbus.

It should be noted that *there are no right or wrong answers*. In each instance, you should mark the answer which you think best reflects how you feel or what you think. Some questions or statements require an indication of your opinion as it relates to the Program graduate under consideration, while others seek your feelings on matters of a more general nature. (The graduate under consideration is identified on the following page.) Please respond accordingly. In every instance, be sure to mark an answer. Please do not leave any question or statement unanswered, and feel free to make any additional comments regarding the questionnaire or the Program in Health Systems in general on the margins or on the back of any of the following pages.

SECTION 1--BIO

PRESENT POSITION: _____

PRIMARY RESPONSIBILITIES: _____

YEARS IN HEALTH FIELD: _____ YEARS WITH PRESENT ORGANIZATION: _____

EDUCATION:

	Institution	Major	Degree	Date Received
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____

How long have you worked with _____?
_____ months

How familiar are you with her/his work?

Not at all 1 2 3 4 5 Very Familiar

SECTION 2--JF

1. At the time of his/her initial contact with you, to what extent did the Health Systems graduate exhibit an adequate knowledge of the health field?

Not at all 1 2 3 4 5 Very Much

2. The performance of the employee under consideration indicates that her/his technical competence is:

Poor 1 2 3 4 5 Excellent

3. The Health Systems graduate exhibits knowledge of methods and techniques required by his/her job.

Strongly Agree 1 2 3 4 5 Strongly Disagree

4. The Health Systems graduate exhibits real-world, problem solution orientation and attitudes.

Strongly Agree 1 2 3 4 5 Strongly Disagree

5. To what degree did the graduate's educational preparation satisfy the actual requirements of her/his job?

Not at all 1 2 3 4 5 Very Much

6. Was the Health Systems graduate better prepared to perform his/her job in your organization than an individual with similar technical skills but without previous exposure to the health field?

Not at all 1 2 3 4 5 Very Much So

7. Has the employee so far filled the need for which she/he was hired?

Not at all 1 2 3 4 5 Very Much So

8. To what extent did the efforts of the graduate result in reducing costs, or increasing revenue, in the operation of your organization?

Not at all 1 2 3 4 5 Very Much

9. To what extent have the efforts of the graduate increased the efficiency of your organization's delivery of services?

Not at all 1 2 3 4 5 Very Much

10. To what extent have the skills and knowledge of the Health Systems graduate been used to influence major policy decisions rather than applied to minor operational problems?

Not at all 1 2 3 4 5 Very Much

11. To what extent have the graduate's plans and recommendations been implemented?

Not at all 1 2 3 4 5 Very Much

12. To what extent do you consider the employee's position to be justified from a cost-benefit standpoint?

Not at all 1 2 3 4 5 Very Much

13. Does the graduate seem confident in his/her ability to tackle new problems?

Not at all 1 2 3 4 5 Very Much So

14. Does the Health Systems graduate perform well without supervision?

Not at all 1 2 3 4 5 Very Much So

15. How satisfied are you with the graduate's quality of output?

Not at all 1 2 3 4 5 Very Satisfied

16. How satisfied are you with the graduate's oral communication proficiency?

Not at all 1 2 3 4 5 Very Much So

17. How satisfied are you with the graduate's written communication proficiency?

Not at all 1 2 3 4 5 Very Satisfied

18. To what extent are you satisfied with the graduate's interpersonal relations?

Not at all 1 2 3 4 5 Very Much

19. Does the Health Systems graduate under consideration fit well in your organization?

Not at all 1 2 3 4 5 Very Well

SECTION 3--C

- Following are selected subject areas that are covered in the curricula of the Program in Health Systems. For each one, estimate both (a) the extent of the employee's preparation in that area, and (b) the utility of that subject matter in the employee's job. (A response of "1" indicates no preparation and no utility while a response of "5" indicates maximum preparation and maximum utility.)

	<u>Subject Areas</u>	<u>Preparation</u>					<u>Utility</u>				
1-2	Accounting	1	2	3	4	5	1	2	3	4	5
3-4	Economics	1	2	3	4	5	1	2	3	4	5
	Health Systems										
5-6	a. General Orientation to the Health Field	1	2	3	4	5	1	2	3	4	5
7-8	b. Health Issues, Problems, and Needs	1	2	3	4	5	1	2	3	4	5
9-10	c. Hospital Functions and Organization	1	2	3	4	5	1	2	3	4	5
11-12	d. Non-hospital Components of the Health Care System	1	2	3	4	5	1	2	3	4	5
13-14	e. Health Systems Analysis Techniques	1	2	3	4	5	1	2	3	4	5
15-16	Information Systems	1	2	3	4	5	1	2	3	4	5
17-18	Probability and Statistics	1	2	3	4	5	1	2	3	4	5
19-20	Psychology and Sociology	1	2	3	4	5	1	2	3	4	5

- For each of the following types of managerial problems, please estimate both (a) the extent of the graduate's educational preparation in addressing that type of problem, and (b) the usefulness of some prior exposure in an academic setting to that problem area in meeting the actual requirements of the graduate's job.

	<u>Managerial Problems</u>	<u>Preparation</u>					<u>Utility</u>				
79-80	Improving Work Methods	1	2	3	4	5	1	2	3	4	5
81-82	Management of Information	1	2	3	4	5	1	2	3	4	5
83-84	Job Analysis and Evaluation	1	2	3	4	5	1	2	3	4	5
85-86	Employee Motivation and Compensation	1	2	3	4	5	1	2	3	4	5
87-88	Anticipating Future Requirements	1	2	3	4	5	1	2	3	4	5
89-90	Inventory Management and Control	1	2	3	4	5	1	2	3	4	5
91-92	Facilities Design and Space Utilization	1	2	3	4	5	1	2	3	4	5

113 Are there any subject areas and/or managerial problem areas not previously listed that you feel should be incorporated into the Program in Health Systems curricula?

Yes No

If "Yes," please describe them.

[illegible]

SECTION 4--GIMP

1. From your present knowledge of the health field, to what extent do you discern a need for health systems practitioners?

None at all 1 2 3 4 5 Very Great

2. Do you believe that there will be an increase in the demand for health systems practitioners within the next five years?

Not at all 1 2 3 4 5 Very Much So

3. How familiar are you with Georgia Tech's Program in Health Systems?

Not at all 1 2 3 4 5 Very Familiar

4. In general, were the academic attributes of the Health Systems graduate what you expected?

Not at all 1 2 3 4 5 Very Much

5. If the situation came up, I would hire another graduate of the Program in Health Systems.

Strongly Disagree 1 2 3 4 5 Strongly Agree

GEORGIA INSTITUTE OF TECHNOLOGY
ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

(404) 894-4550

17 November 1976

As one of the requirements of the federal grant that enabled us to establish the Program in Health Systems in 1972, a formal evaluation of our curricula and courses is now in progress. An important part of this evaluation calls for your views on the value of the education you received at Georgia Tech and the extent to which your courses at Tech prepared you for your post-graduate activities.

I am asking that you respond to the enclosed questionnaire which has been designed to acquire the information we need, while minimizing your time and trouble. Please take the few minutes required to complete the questionnaire and return it to us in the stamped, pre-addressed envelope provided for your convenience; our deadline is 15 December 1976.

Your opinions and experiences are important in finding ways of improving Health Systems at Georgia Tech, and we earnestly solicit your participation. Thanks so much.

Sincerely,

Regents' Professor and Director

10

Enclosure

GEORGIA INSTITUTE OF TECHNOLOGY

ATLANTA, GEORGIA 30332

PROGRAM IN HEALTH SYSTEMS
COLLEGE OF ENGINEERING

(404) 894-4550

EVALUATION QUESTIONNAIRE
(HS ALUMNUS)

This questionnaire is designed to obtain your opinion on various aspects of the Program in Health Systems. Information obtained from questionnaire respondents will be used in an aggregate sense only, thus preserving anonymity of responses. Individual responses will be seen only by appropriate members of the Health Systems (HS) faculty and staff. If you have any questions about the questionnaire, or the evaluation in general, please call 404-894-4550 collect and ask for Mr. Julian Pittman. Your cooperation is greatly appreciated.

* * * * *

General Instructions

Following the biographical information requested in the next section are several sections containing various statements or questions about which you are asked to express your opinions or feelings. To standardize this procedure, most of the statements and questions are accompanied by a five-point scale on which you are asked to indicate your answer. Although the specific terms associated with each scale may vary to "fit" a particular question or statement, the scales are basically of two types, both ranging from 1 to 5.

The following scale is typical of those accompanying *questions* about which you are asked to indicate your feelings:

None at all 1 2 3 4 5 Very Much

On this type scale, a "1" indicates "none" and a "5" means "very much." A "3" in this case indicates a moderate amount between "none" and "very much."

Typifying the scales accompanying *statements* is the following:

Strongly Disagree 1 2 3 4 5 Strongly Agree

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Following are two examples:

Instructions: Circle the number that best reflects how you feel.

Question: How much of what is available for viewing on television is beneficial from an educational point of view?

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The individual answering "2" in the *question* above feels that little of educational benefit is prevalent in the available programs on TV. The respondent circling "5" for the *statement* above has apparently never crossed the Rocky Mountains nor heard of the exploits of Christopher Columbus.

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SECTION 1--BIO

PRESENT OCCUPATIONAL OR EDUCATIONAL STATUS: _____

EDUCATION:

	Institution	Major	Degree	Date Received
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____

Are you planning to work in the health systems field in the future?

Yes _____ No _____ Uncertain _____

SECTION 2--C

- Following are selected subject areas and techniques that are covered in the Program in Health Systems. For each one, please indicate the extent of your educational preparation in that area. (A response of "1" indicates no preparation while a response of "5" indicates maximum preparation.)

<u>Subject Areas</u>		<u>Preparation</u>				
1	Accounting	1	2	3	4	5
3	Economics	1	2	3	4	5
Health Systems						
5	a. General Orientation to the Health Field	1	2	3	4	5
7	b. Health Issues, Problems, and Needs	1	2	3	4	5
9	c. Hospital Functions and Organization	1	2	3	4	5
11	d. Non-hospital Components of the Health Care System	1	2	3	4	5
13	e. Health Systems Analysis Techniques	1	2	3	4	5
15	Information Systems	1	2	3	4	5
17	Probability and Statistics	1	2	3	4	5
19	Psychology and Sociology	1	2	3	4	5
<u>Techniques</u>		<u>Preparation</u>				
21	Computer Programming and Data Processing	1	2	3	4	5
23	Engineering Economy and Economic Decision-making	1	2	3	4	5
25	Cost Accounting	1	2	3	4	5
27	Health Facility Planning	1	2	3	4	5
29	Facility Layout	1	2	3	4	5
31	Materials Handling	1	2	3	4	5
33	Mathematical Modeling	1	2	3	4	5
35	Optimization Methods	1	2	3	4	5
37	Forecasting	1	2	3	4	5
39	Inventory Management and Control Techniques	1	2	3	4	5
41	Job Analysis and Evaluation Techniques	1	2	3	4	5
43	Manpower Scheduling	1	2	3	4	5
45	Work Scheduling	1	2	3	4	5
47	Methods Analysis and Work Simplification	1	2	3	4	5
49	Time Study	1	2	3	4	5
51	Work Sampling	1	2	3	4	5

	<u>Techniques</u>	<u>Preparation</u>				
53	Standard Data	1	2	3	4	5
55	Predetermined Motion Times	1	2	3	4	5
57	Descriptive Statistics	1	2	3	4	5
59	Estimation and Hypothesis Testing	1	2	3	4	5
61	Bivariate Analysis	1	2	3	4	5
63	Multivariate Analysis	1	2	3	4	5
65	Project Management Techniques	1	2	3	4	5
67	Quality Control	1	2	3	4	5
69	Simulation	1	2	3	4	5
71	Queuing Theory	1	2	3	4	5
73	Staffing	1	2	3	4	5
75	Systems Analysis	1	2	3	4	5
77	Decision Theory	1	2	3	4	5

- For each of the following types of managerial problems, please estimate the extent of your educational preparation.

	<u>Managerial Problems</u>	<u>Preparation</u>				
79	Improving Work Methods	1	2	3	4	5
81	Management of Information	1	2	3	4	5
83	Job Analysis and Evaluation	1	2	3	4	5
85	Employee Motivation and Compensation	1	2	3	4	5
87	Anticipating Future Requirements	1	2	3	4	5
89	Inventory Management and Control	1	2	3	4	5
91	Facilities Design and Space Utilization	1	2	3	4	5
93	Costing and Economic Evaluation	1	2	3	4	5
95	Resource Allocation	1	2	3	4	5
97	Staffing and Scheduling	1	2	3	4	5
99	Personnel Administration	1	2	3	4	5
101	Planning Health Facilities	1	2	3	4	5
103	Financial Management and Control	1	2	3	4	5
105	Project Management	1	2	3	4	5
107	Cost Containment	1	2	3	4	5
109	Compliance with Regulatory Requirements	1	2	3	4	5

- Yes _____ No _____

[illegible]

1. In general, how satisfied were you with the education provided to you by the Program in Health Systems?

2. Do you feel that the faculty of the Program in Health Systems was attuned to contemporary issues in the field of health systems?

3. From your present knowledge of the health field, to what extent do you discern a need for health systems practitioners?

6

SECTION 4--WDWGW

1. Briefly state your reasons for not being presently employed in the health systems field.

2. Did any aspect of your health systems education influence your decision not to seek employment in the health systems field?

Yes _____ No _____

If "Yes," what aspect?

3. Has your health systems education helped you in any way in your present situation?

Yes _____ No _____

If "Yes," how?

DESCRIPTION OF EXHIBITS

The following supplements were developed in conjunction with the training project but, because of their form, are bound separately as exhibits to this report:

- | | |
|------------|---|
| Exhibit #1 | Health Systems Course Documentations, gold volume, 173 pp., dated September 1977. |
| Exhibit #2 | <u>1976-77 General Catalog</u> , Georgia Institute of Technology, a book, 358 pp. |
| Exhibit #3 | <u>Field Training Manual</u> , gold volume, 63 pp., dated September 1976. |
| Exhibit #4 | <u>Field Training Reports</u> , gold volume, 53 pp., dated April 1977. |
| Exhibit #5 | "Proposal to Establish the School of Health Systems," gold volume, 50 pp., dated December 1976. |
| Exhibit #6 | <u>Readings for HS 3011</u> , gold volume, 91 pp., dated January 1977. |
| Exhibit #7 | <u>Readings for HS 3021</u> , gold volume, 324 pp., dated January 1977 |
| Exhibit #8 | <u>Readings for HS 4021</u> , gold volume, 206 pp., dated June 1977 |