

"A NARRATIVE DESCRIPTION INCLUDING AN ARCHITECTURAL PROGRAM WITH SPACE SCHEDULES"

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL

MINNEAPOLIS, MINNESOTA 55455

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## ABSTRACT

Three major considerations prompted the faculty of the Medical School to plan conjointly with the other Health Sciences Disciplines for the development and expansion of the Health Sciences Center.

1. The need for an increased number of health care personnel, including physicians, has been amply documented by intramural reviews and independent studies. An increased Medical School class has been recommended by a Public Advisory Commission on the basis of a study performed under the auspices of the Louis W. and Maud Hill Family Foundation of Saint Paul. Adequate, expanded facilities are needed to teach an augmented number of medical students and house the faculty attendant upon the increase in class size.
2. The need to provide a development and expansion of facilities appropriate to a newly developed curriculum, with its special requirements for versatile laboratories, classrooms, and teaching aids, has become evident.
3. Already over-crowded basic science and clinical facilities, barely adequate to provide instruction facilities for the current size Medical School enrollment, reinforce the need for expansion.

The Health Sciences Development Program is divided into two large phases. Phase I., which is directly related to the proposed class size increment of 40 for the Medical School, is scheduled for three steps.

Step 1, the specific subject of this current project and application, consists of expanded facilities for the Medical School, the School of Public Health, and the School of Dentistry, and expanded, modern shared classroom areas. Specific facilities for the Medical School included in this project are teaching laboratories and their support areas for the Departments of Biochemistry, Pharmacology, Physiology, Pathology, and Microbiology and offices and laboratories for the Departments of Medicine and Pediatrics.

Steps 2 and 3, which will be the subject of later applications, consist of an out-patient unit, a clinical department laboratory area, renovation and expansion of current basic science and clinical departmental areas, expansion of University Hospitals bed facilities and renovation of current clinical units, and expanded, renovated facilities for the School of Nursing. Also included are a service unit, a Radiation Therapy unit, and a unit for the School of Pharmacy.

It is estimated that the total cost of Phase I will approach \$95 million. The subject of this current proposal is estimated at \$40 million, of which about \$28 million are construction costs. Approximately \$5.8 million will be the Medical School's portion of the costs.

Upon completion of the current project, scheduled for 1973, the incoming Medical School class will be increased from 163 to 203 students. Future facilities expansion, beyond the current project, but included in the total program, will allow completion of facilities in time to meet the needs of the augmented classes when they reach the more clinically oriented portions of the curriculum. The current project will provide new and expanded, efficient classroom teaching areas; new versatile Basic Science teaching laboratories, adequate to accommodate increased numbers of students and effectively implement the new curriculum including a program in Family Practice and Community Health, which begins in September, 1969; and the initial expansion of several clinical departments, the final expansion of which will take place in Steps 2 and 3.

HISTORY OF THE MEDICAL SCHOOL

The first classes in Medicine at the University of Minnesota began in 1888, when three private Medical Schools in Minneapolis and St. Paul surrendered their charters to the University of Minnesota for the purpose of establishing a Medical School. At that time the Department of Medicine included the College of Medicine and Surgery, the College of Dentistry, and the College of Homeopathic Medicine and Surgery. In 1892, the Department of Medicine was reorganized, providing for three separate colleges and the addition of the newly established College of Pharmacy.

Further reorganization resulted in the formation of the College of Medical Sciences, which currently includes the Medical School, the School of Nursing, the School of Public Health, and University Hospitals, the first unit of the University Hospitals having been dedicated in 1911.

Expansion resulted in the progressive increase in the size of the Medical School classes and the emergence of the School as a major teaching and research center. In 1963, the administrative committee of the Medical School recommended an increase in the class size, then at 150 students, contingent from adequate facilities and staff, in order to meet the emerging needs for health manpower in the state and in the nation.

In 1964, the Board of Regents of the University of Minnesota considered the growing need of Minnesota for health manpower required by the state's growing population and the manner in which this need would affect the role of the University in providing physicians and other health care personnel. The Regents requested the Louis W. and Maud Hill Family Foundation of St. Paul to investigate these health needs of the State. In June of 1966, the Hill Family Foundation published a report, "Health Manpower for the Upper Midwest," which documented the need for training additional health personnel for Minnesota. The Public Advisory Commission appointed by the Hill Family Foundation to aid in conducting the survey and reaching its conclusions recommended that the University of Minnesota expand its entering medical class to 200 students at an early date and plan for a further expansion to 250 students at sometime in the future; that the University encourage additional students from the 2 year medical school of North and South Dakota to complete their training at the University of Minnesota; and that the University strengthen the teaching of skills and attitudes relative to the responsibilities of the personal or family doctor so that the institution's position as a major provider of personal physicians for the upper Midwest would not be lost.

In 1966, extensive faculty planning for physical expansion of the University Medical School began.

In 1966, the Medical School faculty adopted a new constitution and bylaws. This constitution was last revised on November 7, 1968.

The newly formed department of Family Practice and Community Health was approved by the faculty in 1968. That same year, the faculty of the Medical School, after extensive planning, adopted a new curriculum which is to be implemented in September, 1969.

JUSTIFICATION AND NEED

Although the State of Minnesota currently enjoys a physician to population ratio near the National average, when factors such as the high density of physicians at the Mayo Clinic at Rochester and at the University of Minnesota Health Sciences Center are considered, the ratio is less favorable. In addition, there is a maldistribution of physicians between rural and urban areas. Furthermore, the University of Minnesota Medical School is the only 4 year school serving a four state area of the upper Midwest. The anticipated population growth of the State and the upper Midwest area, associated with the ever-increasing demands of the people of the area for better, more extensive health care, have posed a challenge to the University of Minnesota Medical School to provide increasing numbers of graduate physicians.

In 1963, the faculty of the Medical School early recognized the impending crisis in Health manpower requirements and recommended a major increase in the size of the Medical School class. Earlier adjustments in class size resulted in an increase to 140 from 125 in the late 1950's, an increase to 150 in 1960 and, finally, an increase to 160 in 1964.

In 1964, the Regents of the University requested a study to investigate the health needs of the people of the State and the Upper Midwest, performed under the auspices of the Louis W. and Maud Hill Family Foundation. This resulted in the study, Health Manpower for the Upper Midwest, published in 1966. This thorough and extensive document provided a basis for a recommendation by a Citizens Advisory Commission that the School of Medicine increase its class size to, at least, 200 and establish a curriculum to train increased numbers of personal, or family, physicians.

"Although there is no generally accepted way of estimating the number of physicians needed, the requests for doctors made by many communities to official and other agencies spoke for a substantial unsatisfied demand. It was clear that the current ratio of physicians to population should at least, be maintained.

By estimating the number of physicians who will be lost to Minnesota in the next ten years through death, retirement, or outmigration, and by balancing this figure against the estimated additions to the profession and against the expected population of Minnesota in 1975, the Health Manpower Study estimated that there would be between 200-300 fewer physicians than would be needed to maintain the present ratio of active physicians to population.

Estimates can only serve as rough measures. When we turn to trends in the supply of physicians, we are on firmer ground. The long-term decline in the doctor: population ratio of active and of personal physicians went far toward explaining the insistent feeling that there is already a shortage. As the medical profession differentiates increasingly into specialty practices--some of which do not involve direct patient care--an increased number of physicians will be required merely to meet present demands and needs.

A greatly increased demand for medical care must be anticipated because of Medicare, rapid growth of personal income, improvements in health insurance and population growth. To accommodate this increased demand, there should be some betterment of the present ratio.

The evidence relating to population growth is impressive. Between 1960 and 1975 the state will have gained population equal to the 1960 combined population of Minneapolis, Rochester, Mankato and Austin. The demand for medical care from this expanding population must be taken into consideration.

Since an increase in the size of the University of Minnesota Medical School's entering class of 1967 will not be fully reflected in practice until about eight years later, the anticipated shortage will not begin to be met by more graduates until 1972, at the earliest, or by 1975 when most of the 1967 entrants will complete their hospital training. More than token expansion of the class entering in 1967 may not be possible. By 1975 Minnesota will have to be planning to meet the needs of further population growth.

Any dependence on recruitment of physicians from other states is hazardous. While there is no doubt that physicians trained out-of-state will continue to settle in Minnesota, the factors which cause Minnesota graduates to go to other states will also act on these physicians. Tabulation by the Study staff shows that the number of physicians who are educated elsewhere and who settle in Minnesota tends to be declining.

Therefore the Health Manpower Study Advisory Commission recommends that the University of Minnesota expand its entering class to 200 students at an early date and lay plans for a further expansion to 250 at some time in the future."\*

Increased numbers of physicians, trained at the University of Minnesota to coordinate their activities with other health professions personnel, will help to maintain and increase effective physician services to the people of the area. Increased numbers of physicians, educated in a curriculum which prepares them for contemporary practice and which includes a strong Department of Family Practice and Community Health will help insure not only an adequate number of prepared physicians but also an improvement in the distribution of physicians throughout the area.

\*Health Manpower For The Upper Midwest, Peterson, O.L., Executive Director and Fahs, I.J., Director of Field Studies. Louis W. and Maud Hill Family Foundation, Saint Paul, Minnesota, 1966. p.95.

FACILITIES AND THEIR DEFICIENCIES

The Basic Science Departments of the Medical School are housed in Jackson Hall (1911), Millard Hall (1911), Lyons Laboratories (1951), and the Owre-Jackson addition (1958). Although the Lyons Laboratories and the Owre-Jackson addition are of fairly recent vintage, the majority of the space for the Basic Science Departments is located in the Jackson Hall and Millard Hall which are over fifty years old. These facilities have served there purpose well but for some years have been outmoded and over-crowded. Although many of the facilities were remodeled in the late 1950's the experiences during, and since, the renovation have emphasized the basic inadequacies of the Physical Plant. Mechanical and electrical services are basically inadequate. Student and faculty movement throughout the facilities are inefficient and elevator service is minimal. Except in few instances, student laboratories are crowded beyond capacity. They tend to be ineffective and do not lend themselves to new and more acceptable teaching methods.

Faculty laboratories are crowded, inefficiently organized, and hardly conducive to increasing research by the faculty. These laboratories are so crowded that even washrooms have been commandeered for use as laboratories. Faculty offices are small, crowded, inefficiently arranged, and generally disreputable. There is a general lack of seminar and classroom space for student and faculty.

In the basic science areas there are no amenities of student life. There are no student lounges or student areas. There is no place where students may effectively congregate and pursue their intellectual endeavors. Larger classrooms and auditoria are outmoded and because of their physical deficiencies are unable to be provided with appropriate audio-visual and electronic teaching aids.

Without expansion and renovation of these facilities, it would be impossible to expand Medical School enrollment or that of the other health science units. Not only would it be impossible to house the students, but there literally would be no space available for the increase of faculty attendant upon the increased enrollment. Under current conditions, in spite of increased faculty endeavors, the quality of instruction has suffered. It would be impossible to improve the quality of instruction by the use of newer teaching techniques and to implement a new curriculum which requires versatility of physical facilities.

The clinical programs and facilities of the School of Medicine are housed in the University Hospitals, which include the Mayo Tower, Todd and Eustis Wings, the Variety Club Heart Hospital, the Masonic Memorial Hospital and the Children's Rehabilitation Center. The latter three units were built in 1949, 1958, and 1962 respectively while the main hospital complex was

developed in stages from 1911 and 1954. Again it should be noted that these facilities serve the inpatient and outpatient programs of not only the medical school but the other health sciences as well.

While it is important to note that the other health sciences are also developing new programs under new staff it is particularly significant that in the School of Medicine the chairmanship in half the clinical departments has changed hands during the last three years. Consequently young, aggressive, medical educators have assumed the leadership roles in these departments bringing along with them faculty who are interested in new and expanding programs. We might cite transplantation, chronic dialysis, specialized surgical units, cardiac intensive care, family practice, clinical research centers, and nursing organization and research as some of the programs which are presently making do with inadequate, although sometimes remodeled, facilities. At the same time many of the smaller clinical departments have increased the size of their staffs from one or two men to three or four thus doubling the requirements for teaching patients as well as office and research space.

The inability to accommodate these expanded programs physically is heightened by the difficulty of adapting architecture designed as much as fifty years ago to contemporary needs and potentialities. The present facilities, even when remodeled, do not allow us to take advantage of many forms of electronic communication for transmission of data, records, and information or mechanical transportation systems for better flow of patient records, radiographic film and patient service items. These deficiencies have an inhibiting effect on patient service and education.

There is a serious shortage of seminar areas and classroom facilities. Large classrooms and auditoria are outmoded and unable to accommodate, at any one time, a single, current medical school class. Patient, faculty, and student traffic pathways are inefficient and time wasting.

Clinical faculty and departmental offices, which are located in this complex, are greatly outmoded and seriously over-crowded with the result that it is necessary to house faculty in buildings outside the hospital complex and even off campus.

Student laboratories are small, cramped, and contain few services. There are not enough laboratory facilities to accommodate the number of faculty needed to teach the current medical students, so that faculty laboratories have been developed in old and temporary structures away from the hospital complex and from the campus and away from the clinical activities of the faculty.

The Hospitals Outpatient Department is over-crowded and not conducive to patient acceptance. With the anticipated need for more outpatient services for the people of the state and the area, the total space proves inadequate.

Again, the clinical areas, because of their physical restrictions, are not adequate to provide facilities for an increased size of a Medical School class. The numbers of teaching beds, offices laboratories, and hospital services are so restricted and so aged that it would be impossible to consider an increase in the size of the Medical School class without impairing the quality of instruction.

## Part I A Background

### EDUCATIONAL PHILOSOPHY OF THE MEDICAL SCHOOL

The objectives of the Medical School are to teach students, at all levels of training and experience, the expanding art and science of Medicine; to foster basic and clinical research; and to provide exemplary models for health care for the people of Minnesota, the Upper Midwest, and the Nation.

Responding to the needs of the student of Medicine to assimilate ever increasing bodies of knowledge and to develop professional attitudes responsive to the needs of society, to the demands of the people of the state of Minnesota and of the Nation for improved health care, and to the changes in the professional structure of American medicine; the faculty adopted a new undergraduate curriculum in 1968. This curriculum stresses goals which ensure a relevant, flexible medical education and which emphasizes the student as a learner of medicine. The curriculum will improve communications among faculty and students, will prepare the Medical student for the future of Medical practice, and will inculcate the humanistic aspects of Medical care. These goals are to be pursued in a setting which encourages interchange with other health science students and personnel leading to an awareness of the health team concept in the provision of health care.

These same goals are applicable to graduate education where, in addition, excellence in the basic sciences and the various clinical specialities, including family practice, is pursued.

Realizing the need for continuing education for the graduate physician, the post-graduate education program has stressed predominantly the short-course method for providing relevant and important information for the practicing specialist and generalist.

Research at the University of Minnesota has focused primarily upon inquiry into basic biological phenomena and applied clinical research. These endeavors have also included investigation into medical education and the social influences upon health education and health care delivery.

The University's concept of service has been expanded by the faculty and students of the Medical School by their example of health care in the community, by their consultation services to the physicians of the State and region, by their provision of health care to the indigent of the State and the Metropolitan area, by their participation in Community-Medical related projects, and by their encouragement of the health care team concept.

## THE PLANNING PROCESS

Overall planning for the Health Sciences Development Program was coordinated by the planning office of the University of Minnesota. A committee composed of faculty and administrative representation from the various health sciences, School of Medicine, University Hospitals, School of Dentistry, School of Nursing, and School of Public Health, coordinated the various activities of faculty groups. Medical School planning was accomplished by the Clinical Teaching and Research Committee, which was responsible for the clinical aspects of the program, and the Committee on Basic Sciences, which planned the basic sciences development program. Besides these faculty committees, various faculty subcommittees were responsible for the programmatic and architectural aspects of various portions of the planning, e.g., the Out-patient Committee, the Operating Suite Committee, etc. The overall educational aspects of the Medical School program were considered by the Clinical Teaching and Research and Basic Science Committees with the ratification and the advice of the Educational Policy Committee of the Medical School with set various educational priorities to be satisfied in the Development Program based upon the proposed curriculum.

A major increase in the size of the Medical School classes, contingent upon adequate facilities and staff, was originally recommended by the Administrative Committee of the Medical School in 1963. The Administrative Board of the Medical School concurred in this recommendation in 1968, basing the decision upon the Hill Family Foundation Study contained in the report, "Health Manpower for the Upper Midwest" and materials presented to a special interim subcommittee of the State of Minnesota Senate.

Part I B

MEDICAL - COMMUNITY RELATIONSHIPS

Community - University Health Care Center - The University of Minnesota has served as a subcontractor to the Minneapolis Health Department in providing services under a grant from the Children's Bureau of the Department of Health, Education and Welfare. The Community - University Health Care Center (CUHCC) serves a population outlined by three elementary school districts in a minority group, underprivileged area of the Numbers of University staff and students have participated in the Center program of investigating the best way to deliver health care to such a population. Disciplines represented have included Medicine, Dentistry, Psychology, Nursing, Nutrition, Social Work, Audiology, Health Education, and Health Administration. It is hoped that this project may be ongoing and self supporting after the conclusion of the grant which initiated it.

The University of Minnesota School of Public Health is the grantee agency for evaluating the Children and Youth Projects all over the country of the type described for CUHCC.

Pilot City Project - The University is providing through its close affiliate, Hennepin County General Hospital, medical staff for the Pilot City Clinic recently opened in another minority, underprivileged area of the city. The University involvement is more indirect in this case, but there is potential for further interdisciplinary participation in this potentially important project.

Comprehensive Health Planning - The Dean of the College of Medical Sciences, Faculty of the School of Public Health and the Dean of the College of Pharmacy serve on the governor's Council on Health, Rehabilitation and Welfare which serves as the comprehensive health planning advisory council for the State of Minnesota.

Within the local community the University, and particularly the Hospitals, have cooperated with the comprehensive health planning agency as they made their study leading to the recommendation that comprehensive health planning be assigned to the Metropolitan Council.

Twin City Hospital Planning Agency - As mentioned in the general statement, the University Hospitals has submitted the hospitals portion of the development program for review by the local hospitals planning agencies. The agency has not only approved the project but written a report supporting and recommending its implementation.

Beyond the Hospitals association with the planning agencies related to its own project, the staff of the Hospitals has been an important supportor of the planning concept in the Twin Cities. The Director of the Hospitals and other members of his staff have devoted generous amounts of time to assisting the joint staff of the two hospital planning boards with their work in reviewing hospital requests, a role definitions of the planning body itself, establishing its position relative to comprehensive health planning, and recommending the merger of

the two hospitals planning agency boards into one metropolitan area council.

Regional Medical Program - The University has been a participant in the regional program which has received operational funds. Membership in the program is composed of nine state-wide health agencies, including the University, which have become incorporated into the Northlands Regional Medical Program, Incorporated.

The Medical School staff and administration has been actively engaged in the development and utilization of this resource. Several programs of the Medical School have received operational grants.

MEDICAL SCHOOL ORGANIZATION

The Medical School is a unit of the College of Medical Sciences which contains, in addition, three other major elements, the School of Public Health, the School of Nursing, and the University Hospitals. The Dean of the College serves the function of the Dean of the Medical School. Direct administration of Medical School affairs is under the jurisdiction of an Executive Officer, the Associate Dean of the Medical School and his staff of 2 Assistant Deans, who report directly to the Dean.

An Associate Dean of the College is responsible for extramural and community responsibilities of the College including affiliated hospital liaison. An Assistant Dean of the College is primarily responsible for physical facility development and planning.

The Health Sciences Schools, including the four major elements of the College of Medical Sciences, and the School of Dentistry, the School of Pharmacy, and the School of Veterinary Medicine are loosely affiliated in a Health Sciences Council of Deans and Directors. The conjoint planning of the current project is an example of the interdisciplinary liaison which has characterized this Council.

The following chart demonstrates the internal organization of the school and its relationship to other components of the College of Medical Sciences and the University.

BOARD OF REGENTS

PRESIDENT OF UNIVERSITY

VICE PRESIDENT  
STUDENT AFFAIRS

VICE PRESIDENT  
EDUCATIONAL RELATIONSHIPS & DEV.

VICE PRESIDENT  
ADMINISTRATION

VICE PRESIDENT  
ACADEMIC ADMINISTRATION

VICE PRESIDENT  
BUSINESS ADMINISTRATION

DEAN COLLEGE OF MEDICAL SCIENCES

M-18

DEAN  
SCHOOL OF  
NURSING

DEAN  
SCHOOL OF  
PUBLIC HEALTH

ASSOCIATE DEAN AND  
EXEC. OFFICER MED. SCH.

DIRECTOR  
UNIVERSITY  
HOSPITALS

EXEC. DIR  
POSTGRAD  
EDUCATIO

COUNCIL OF BASIC  
HEALTH SCIENCES  
DEPTS. OF  
ANATOMY  
BIOCHEMISTRY  
MICROBIOLOGY  
PATHOLOGY  
PHARMACOLOGY  
PHYSIOLOGY

COUNCIL OF BASIC  
SCIENCES  
DEPTS. OF  
MEDICINE  
OBSTETRICS & GYNECOLOGY  
OTOLARYNGOLOGY  
PEDIATRICS  
SURGERY  
LABORATORY MEDICINE  
RADIOLOGY  
PSYCHIATRY & NEUROLOGY  
PREVENTIVE MEDICINE  
PHYSICAL MEDICINE &  
REHABILITATION  
OPHTHALMOLOGY  
ANESTHESIOLOGY  
FAMILY PRACTICE &  
COMMUNITY HEALTH  
ORTHOPEDIC SURGERY

DIRECTOR  
HISTORY OF  
MEDICINE

DIRECTOR  
MORTUARY  
SCIENCE

Part I C Organization

MEDICAL SCHOOL COMMITTEES

Administrative Board of the Medical School

It shall be responsible for overseeing the administration of the policies of the Executive Faculty relating to educational matters and shall be advisory to the Dean with respect to budgetary and other aspects of the administration of the Medical School. In particular, the Dean will discuss with the Administrative Board all aspects of the preparation of the annual budget, including policies governing the allocation of funds for salary increases and general policies concerning the allocation and expenditure of the various resources of the Medical School not designated for specific purposes.

Faculty Advisory Council of the Medical School

In recognition of the need of the Dean for a small, responsible group of advisors who can meet with him frequently, regularly, and on short notice when necessary, there shall be a Faculty Advisory Council that shall include members elected by the Executive Faculty. On policy matters the Faculty Advisory Council shall, through the Dean, make recommendations to the Administrative Board and/or the Executive Faculty, as may be appropriate. It shall take definitive action only with respect to such matters for which responsibility has been delegated to it by the Administrative Board or Executive Faculty. Such delegated responsibilities shall be defined in the Bylaws.

Committee on Committees of the Medical School

The Committee on Committees shall review the scope of the various standing Committees of the Executive Faculty. It shall, after consultation with the Dean, recommend for the consideration of the Executive Faculty at the October meeting each year a slate of candidates for election to each of the various other standing committees of the Executive Faculty. The Committee on Committees shall make a report concerning its activities to the Executive Faculty at least once each year.

Educational Policy Committee of the Medical School

The Committee on Educational Policy shall be responsible for continuing review and evaluation of the undergraduate and graduate educational programs of the Medical School and for making appropriate recommendations to the Executive Faculty for additions to or modifications of the educational programs of the Medical School. It shall make a report concerning its activities to the Executive Faculty at least once each year. Recommendations reported to the Executive Faculty for action shall be subject to prior consideration by the Administrative Board as described in Section D of the Bylaws of the Medical School.

Medical School Admissions Committee

The Medical School Admissions Committee shall be responsible for the selection each year of the students who will carry out studies toward the degree Doctor of Medicine.

MEDICAL SCHOOL COMMITTEES  
continued

Faculty Academic Promotions Committee of the Medical School

Review of recommendations for faculty promotion made by the various Medical School Departments to the Dean's office; notification to the Dean of the Medical School of the Committee's recommendation concerning each proposed promotion; general advice to the Dean of the Medical School concerning policies and procedures for Medical School faculty academic promotions, in accord with the Academic Promotion Policy of the College of Medical Sciences adopted by the General Faculty of the College on November 7, 1968. (The Medical School Committee elects a Chairman each year from among its members; Dr. James Dawson was elected Chairman for 1969).

Committee on Student Scholastic Standing of the Medical School

This Committee will consider the cases of students doing unsatisfactory Medical School work at the end of each academic quarter and recommend appropriate disposition of each case. Acting for the Executive Faculty, it shall be responsible for recommending to the Dean those students eligible for advancement and those students eligible for graduation with the degree Doctor of Medicine. Policy matters not satisfactorily resolved by the usual procedures of the Committee will be referred for final determination to the Executive Faculty as a whole, which shall hold a special meeting for this purpose at the request of the Committee. In any event, the Committee on Student Scholastic Standing will report on its activities to the Executive Faculty at least once each year.

Anatomical Committee

Administration of law of State of Minnesota - as it relates to procurement and use of bodies for dissection.

Internship Advisory Committee for the Medical School

Development of policies concerning advising medical students concerning selection of internships; implementation of such policies.

Ad hoc Committee to Consider Special Programs in Medical Education  
Programs for Disadvantaged Students

Study of the present and future roles of the Medical School in education of students from disadvantaged minority groups, especially Negroes and Indians, in accordance with action of the Executive Faculty on October 15, 1968; proposal of possible special programs in this area to be presented in Spring 1969 to the Executive Faculty of the Medical School as well as other appropriate Medical School bodies.

## Part I C Organization

### SERVICES FROM OTHER ACADEMIC UNITS

The University of Minnesota Medical School is fortunate in its location in a large academic community to be able to obtain services from other University components or academic institutions.

The University Hospitals provide the clinical laboratories for the education of the medical student. This major component of the College of Medical Sciences is devoted primarily to the education of the Health Sciences students and provides a milieu in which excellent health care may be learned. Its many programs and services, administrators and staff, contribute greatly to the educational endeavors of the Medical School.

The School of Public Health provides instruction to the Medical School student on the principles and practices of Public Health. The relationship between the Medical School and the School of Public Health is strengthened by the Medical School's department of Public Health which consists of faculty from the School of Public Health. The Division of Biometry of the School of Public Health work closely with the departments of the Medical School in the development of various types of statistical data. In addition, faculty from the School of Public Health are working closely with several medical school departments, especially the Department of Family Practice and Community Health, in the development of viable methods for health care delivery in this region.

Faculty of the School of Dentistry contribute to the instruction of medical students in the basic science disciplines and participate in the instruction of the maxillo-facial disorders and certain aspects of cancer and genetics.

The Audio-Visual Department of the University participates in the development of electronic aids in the instruction of Medical Students.

A Physical Plants department of the University plays a predominant role in the maintenance, renovation, and construction of the physical facilities of the School. Staff from the academic areas of engineering and biophysics and the College of Biological Sciences contribute to the teaching and research endeavors of the Medical School faculty.

The faculty and staff of the Medical School will continue to use the computer services of the University main computer center, not only for data processing, but also for computer assisted instruction.

Paramedical students, including occupational therapy students, physical therapy students, medical technology students, and radiology technology students gain their general education through the College of Liberal Arts of the University of Minnesota.

Planned cultural programs for students and faculty continue to enlist the faculty from a number of academic units on the campus, including the history, politics, music, art, philosophy, and education areas.

Services including housing and eating, recreational, sports, and cultural facilities are provided for the Medical Student by the University.

The central administration of the University plays a supportive role in the administration of the Medical School by providing assistance in fiscal and personnel matters.

Part I C Organization

SERVICES RENDERED TO OTHER UNIVERSITY COMPONENTS AND INSTITUTIONS

A significant portion of the activities of the faculty of the Basic Science Departments is the instruction of health science students other than medical students. Instruction in the basic medical sciences is offered to dentistry students, pharmacy students, nursing students, occupational therapy, physical therapy, and medical technology students, mortuary science students, and certain students in the College of Liberal Arts.

The audiology section of the Department of Otolaryngology participates in the education of speech therapy students.

The Department of Psychiatry and the Division of Clinical Psychology combines its education facilities and staff with the Psychology department of the College of Liberal Arts.

Faculty of the Medical School participates strongly in the affairs of the University through membership of the Faculty-Student Senate and several key committees of that group. The administration of the Human Volunteers Review Committee of the University falls within the Medical School. Many Medical School faculty participate in this campus-wide activity.

There is a widespread participation by the student and the faculty of the Medical School in the various community health projects. These are described in a earlier section.

Part I C Organization

UNIVERSITY OF MINNESOTA HOSPITALS - AFFILIATED HOSPITALS

Facilities

1. Name of the Clinical facility: University of Minnesota Hospitals
2. Is the hospital fully approved by the Joint Commission on Accreditation of Hospitals? Yes
3. Who owns the clinical facility? University of Minnesota
4. Are there written terms of affiliation between the hospital and the medical school? Yes
5. Is the appointment of medical staff, responsible for teaching students, subject to formal approval of the medical school? Yes
6. Is the medical staff closed? Yes
7. May physicians other than medical school personnel assume professional responsibility for:
  - a) Ward Patients? No
  - b) Private patients? No
8. List Hospital Standing Committees on which medical school full-time faculty members serve.

Medical Staff-Hospital Council  
 Infection Committee  
 Utilization Committee  
 Pharmacy Committee  
 Medical Records Committee  
 Operating Room Committee  
 Bed Allocation Committee  
 Credentials Committee  
 Disaster Committee  
 Outpatient Committee

9. House Staff	Positions Approved		Currently Filled	
a) Internships	(number)	(number)	(number)	(number)
Rotating	0	-	-	-
Mixed	0	-	-	-
Straight (specify)				
Int. Med.	13		13	
Surgery	16		16	
Pediatrics	12		12	
b) Residencies				
<u>Department</u>				
Surgery	36		36	
Urology	5		5	
Neurosurgery	8		8	
Orthopedics	11*		12	
Anesthesiology	26		22	
Proctology	1		1	
Dermatology	14*		12	
Internal Medicine	36*		24	
Neurology	21*		21*	

Cont. - University of Minnesota Hospitals

9. House Staff

b) Residencies

<u>Department</u>	<u>Positions Approved (number)</u>	<u>Currently Filled (number)</u>
Obstetrics & Gynecology	15*	14*
Ophthalmology	19*	18*
Otolaryngology	12*	18*
Pathology	22	31
Pediatrics	24*	24*
Pediatric Cardiology	8	3
Phy. Med. & Rehab.	32	9
Psychiatry	30	27*
Child Psychiatry	4	4
Radiology	50*	58*

\*Includes those in affiliated hospitals.

10. Number of teaching beds:

	Total
Anesthesiology	4
Dentistry	1
Obstetrics	20
Gynecology	40
Health Service	30
Medicine	140
Dermatology	8
Ophthalmology	24
Otolaryngology	10
Physical Medicine & Rehabilitation	40
Psychiatry - Adult	68
Child	20
Radiotherapy	5
Surgery	128
Urology	23
Orthopedics	24
Neurology	29
Neurology - Neurosurgery	15
Neurosurgery	24
Pediatrics	159
Pediatric Surgery	0
Family Practice	0
Intensive Care Unit	
Open Ward	42
TOTAL	854

11. Does the affiliation with the Out-Patient Department differ from that with the hospital? No
12. Are there specific facilities provided for students to carry out laboratory work on hospital patients? Yes
13. a) Hospital admissions last year No. 15,775  
 b) Average length of stay Days 14.6  
 c) Inpatient per diem cost \$95.10  
 d) Number of outpatient visits No. 113,265  
 e) Outpatient costs per visit \$10.97
14. a) What is the total operating budget of the facility? \$20,541,111  
 b) How much financial support is derived from:
- |                                |              |
|--------------------------------|--------------|
| Patient income                 | \$14,986,919 |
| State appropriation            | \$ 3,223,196 |
| Endowment                      | --           |
| Other (specify) County billing | \$ 2,330,996 |

Facilities

1. Name of the clinical facility: Hennepin County General Hospital
2. Is the hospital fully approved by the Joint Commission on Accreditation of Hospitals? Yes
3. Who owns the clinical facility? County of Hennepin
4. Are there written terms of affiliation between the hospital and the medical school? Yes
5. Is the appointment of medical staff, responsible for teaching students, subject to formal approval of the medical school? Yes
6. Is the medical staff closed? Yes
7. May physicians other than medical school personnel assume professional responsibility for:
  - a) Ward Patients? No
  - b) Private Patients? No
8. List Hospital Standing Committees on which medical school full-time faculty members serve:

All members of the full-time staff of the Hospital numbering 47 are faculty of the University. The full-time staff are members of all Hospital committees. The attending medical staff with a few exceptions, are either members of the regular or clinical faculty and they may also serve on any hospital committee.

9. House Staff

a) Internships	Positions Approved (number)	Currently Filled (number)
Rotating	48	48
Mixed	-	-
Straight (specify)	-	-

b) Residencies

Departments		
Internal Medicine	12	15
Pathology	4	4
Psychiatry (HCGH Residents)	5	1
Surgery	22	18
Urology (HCGH Residents)	3	2
Dermatology	*	2
Neurology	*	2
Obstetrics & Gynecology	*	4
Ophthalmology	*	2
Otolaryngology	*	2
Pediatrics	*	6
Psychiatry (affiliated)	*	2
Radiology	*	3
Orthopedics	*	3
Urology (affiliated)	*	1

\* Residents rotate from University of Minnesota programs.

Facilities (Cont.-Hennepin County General Hospital)

10. Number of teaching beds: 394
11. Does the affiliation with the Out-Patient Department differ from that with the hospital? No
12. Are there specific facilities provided for students to carry out laboratory work on hospital patients? No
13. a) Hospital admissions last year No. 11,829  
b) Average length of stay Days 9.84  
c) Inpatient per diem cost \$67.22  
d) Number of outpatient visits No. 68,237  
e) Outpatient costs per visit \$16.80
14. a) What is the total operating budget of the facility: (Excluding Capital - 1967) \$10,566,501
- b) How much financial support is derived from:
- |                           |             |
|---------------------------|-------------|
| Patient income            | \$4,676,581 |
| State appropriation       | \$ 118,070  |
| Endowment                 | None        |
| Other(specify) Misc. Rev. | \$ 139,273  |
| Tax Alloc. - County       | \$6,284,588 |

+c Facilities- Amendment-Hennepin County General Hospital

10. Number of teaching beds: 394

	<u>Total</u>	<u>Average Daily Census</u>
Medicine	\$2,064,257	79.19
Medical Specialties		31.24
Surgery	\$2,797,161	54.73
Surgical Specialties		55.77
Pediatrics	\$ 551,990	23.33
Obstetrics & Gynecology	\$ 569,361	20.61
Psychiatry	\$ 431,756	21.95
Clinical Research Center	-	-
Rehabilitation	-	-
Other	<u>\$ 223,092.50</u>	<u>          </u>
 TOTAL	 \$6,637.617.50	

Facilities

1. Name of the clinical facility: Veterans Admin. Hospital
2. Is the hospital fully approved by the Joint Commission on Accreditation of Hospitals? Yes
3. Who owns the clinical facility? U.S. Government
4. Are there written terms of affiliation between the hospital and the medical school? No
5. Is the appointment of medical staff, responsible for teaching students, subject to formal approval of the medical school? Yes
6. Is the medical staff closed? Yes
7. May physicians other than medical school personnel assume professional responsibility for:
  - a) Ward Patients? No
  - b) Private Patients?
8. List Hospital Standing Committees on which medical school full-time faculty members serve.

Chief of Staff's Professional Staff Meeting  
Medical Executive Committee  
Medical Record Library Committee  
Committee on Therapeutic Agents  
Research and Education Committee  
Hospital Infections Committee  
Utilization Committee  
Tissue Committee  
Tumor Board

9. House Staff	Positions Approved	Currently Filled
	<u>(number)</u>	<u>(number)</u>
a) Internships		
Rotating	-	-
Mixed	-	-
Straight (specify) Int. Med.	12	8

b) Residencies

Department

Internal Medicine	60	63
Pathology	8	7
Dermatology	6	5
General Surgery	27	30
Anesthesiology	8	3
Neurosurgery	3	3
Ophthalmology	5	5
Otolaryngology	4	5
Orthopedic Surgery	12	13
Thoracic Surgery	2	-
Urology	8	7
Phy. Med. & Rehab.	2	-
Psychiatry	12	7

Facilities - (Cont.-V.A. Hospital)

9. House Staff

b) Residencies

<u>Departments</u>	<u>Positions Approved (number)</u>	<u>Currently Filled (number)</u>
Radiology	45	40
Neurology	4	1
Colon & Rectal	1	-

(Note: These are resident allotments to the V.A. Hospital, and are not the total for the University program)

10. Number of teaching beds: 970

	<u>Total</u>	<u>Average Daily Census</u>
Medicine	249	230
Medical Specialties	128	91
Surgery	117	95
Surgical Specialties	251	230
Pediatrics	0	
Obstetrics	0	
Gynecology	0	
Psychiatry	100	95
Clinical Research Center		
Rehabilitation	40	39
Other Neurology	<u>85</u>	<u>80</u>
TOTAL	970	860

11. Does the affiliation with the Out-Patient Department differ from that with the hospital? No

12. Are there specific facilities provided for students to carry out laboratory work on hospital patients? Yes

13. a) Hospital admissions last year No. 11,465  
 b) Average length of stay Days 27.7  
 c) Inpatient per diem cost \$45 per day  
 d) Number of outpatient visits No. 51,777  
 e) Outpatient costs per visit \$9

15. a) What is the total operating budget of the facility? \$20,000,000

b) How much financial support is derived from:

Patient income	None
State appropriation	None
Endowment	None
Other (specify)	\$20,000,000

Facilities

1. Name of the clinical facility: Saint Paul - Ramsey Hospital
2. Is the hospital fully approved by the Joint Commission on Accreditation of Hospitals? Yes
3. Who owns the clinical facility? County of Ramsey and City of Saint Paul
4. Are there written terms of affiliation between the hospital and the medical school? Yes
5. Is the appointment of medical staff, responsible for teaching students, subject to formal approval of the medical school? Yes
6. Is the medical staff closed? Yes
7. May physicians other than medical school personnel assume professional responsibility for:
  - a) Ward Patients? No
  - b) Private Patients? No
8. List Hospital Standing Committees on which medical school full-time faculty members serve.

Executive Committee  
Joint Conference Committee  
Credentials Committee  
Tissue Committee  
Intern and Residency Committee  
Pharmacy Committee  
Medical Records Committee  
Research & Laboratory Committee  
Utilization Committee  
Infection Committee  
Tumor Committee  
Ambulatory Care Committee  
Long Rang Planning Committee  
Cardiac Care Committee  
Public Relations Committee  
Constitutional Amendment Committee  
Admissions Procedure Committee  
Education Committee  
Department Head Subcommittee  
Joint Education Council  
Disaster Committee

9. House Staff	Positions Approved	Currently Filled
a) Internships	(number)	(number)
Rotating	24	21
Mixed	8	8
Straight (specify)	-	-



TEACHING BEDS

	University of Minnesota Hospitals		Hennepin County General Hospital	St. Paul- Ramsey Hospital	Veterans Admin. Hospital
	Existing	Proposed	Existing*	Existing*	Existing**
Anesthesiology	4	10			
Dentistry	1	1			
Obstetrics	20	20	38	26	
Gynecology	40	40	12	12	
Health Service	30	30			
Medicine	140	150	111 <sup>1</sup>	111 <sup>2</sup>	377 <sup>2</sup>
Dermatology	8	10	5		
Ophthalmology	24	30	4		
Otolaryngology	10	30	6		
Physical Medicine and Rehabilitation	40	40		28	40
Psychiatry - Adult	68	68	20	86	100
Child	20	20			
Radiotherapy	5	10			
Surgery	128	140	59	168 <sup>3</sup>	368 <sup>3</sup>
Urology	23	30	10		
Orthopedics	24	30	11		
Neurology	29	30	27		85
Neurology - Neurosurgery	15	15			
Neurosurgery	24	30			
Pediatrics	159	160	61 <sup>1</sup>	49	
Pediatric Surgery	0	20			
Family Practice	0	20			
Intensive Care Unit		50			
Open Ward	42	20			
Trauma			30		
Bassinets			30		
Other				84	
TOTAL	<u>854</u>	<u>1013</u>	<u>424</u>	<u>564</u>	<u>970</u>

M-33

1 Includes Isolation Beds

2 Includes Medical Specialties

3 Includes Surgical Specialties

\* See Following Page

\* Future expansion of these facilities, based on the anticipated increase in Medical School enrollment, has not been determined. Further development of plans, expected by fall, 1969, for the new curriculum will allow a projection of needed beds and facilities at affiliated hospitals. A \$25 million bond referendum regarding funding for the construction of a new Hennepin County General Hospital will be presented to Hennepin County voters on September 9, 1969. The results of this vote will alter the disposition of Medical Students to the various major affiliated hospitals. Appropriate projections will be submitted to the National Institutes of Health by October 1, 1969. See Letters of Intent from affiliated hospitals and the Educational Policy Committee Statement regarding affiliated hospitals.

\*\* No increase in bed capacity currently planned.

ST. PAUL-RAMSEY HOSPITAL and MEDICAL CENTER

ST. PAUL, MINNESOTA 55101

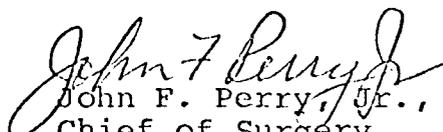
April 25, 1969

Robert B. Howard, M.D.  
Dean, College of Medical Sciences  
University of Minnesota  
Minneapolis, Minnesota 55455

Dear Doctor Howard:

The Saint Paul - Ramsey Hospital and Medical Center, an affiliated hospital of the University of Minnesota College of Medical Sciences, plans to request assistance under the Health Professions Educational Assistance Program in connection with the student increase. The amount of such assistance will be determined in consultation with the College of Medical Sciences of the University of Minnesota.

Very truly yours,

  
John F. Perry, Jr., M.D.  
Chief of Surgery

JFP/j

General Hospital



# Hennepin County

Fifth & Portland South, Minneapolis, Minnesota 55415

April 18, 1969

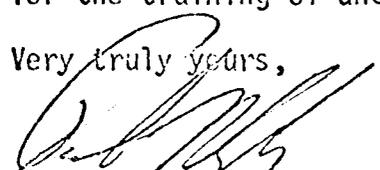
Robert B. Howard, M.D., Dean  
College of Medical Sciences  
1360 Mayo Memorial Building  
University of Minnesota  
Minneapolis, Minnesota 55455

Dear Dr. Howard:

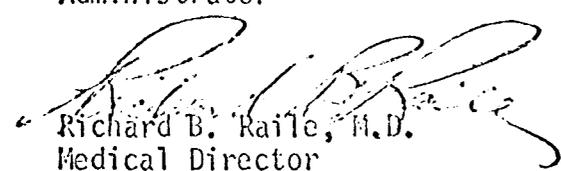
This letter is written in response to your request to the affiliating hospitals of the University of Minnesota regarding the University's application for funds under the Federal Health Professions Educational Assistance Program.

The Hennepin County General Hospital Advisory Board has indicated its intent to authorize, at a future time, Hennepin County General Hospital to apply for funds under the Health Professions Education Assistance Program to permit this institution, through the University of Minnesota, to increase its clinical facilities for the training of undergraduate medical and dental students.

Very truly yours,



Paul J. Vogt  
Administrator



Richard B. Raile, M.D.  
Medical Director

rep

cc Erwin M. Schaffer, D. D. S., Dean  
School of Dentistry  
University of Minnesota

Proposed Statement by the Education Policy Committee for

Facilities Funding Request to NIH

May 15, 1969

In the present curriculum undergraduate medical student teaching is carried out in affiliated hospitals in the second, third, and fourth years. Slightly less than half of the clinical teaching time is now the responsibility of faculty in off-campus locations.

The recently adopted curriculum calls for clinical teaching in each year of both the three and the four year program. Even before expansion of class size occurs, the new curriculum will change the type of clinical teaching program by earlier exposure to patients, by abolition of the present clinical clerkship rotation in favor of a more structured and integrated organ system orientation and a deemphasis of the mechanical aspects of the clerkship, all in the core curriculum. In the tracking portion, the individual student with his advisor will select his program according to career objectives. A return to the basic sciences for a portion of the elective period will be encouraged. The net balance of all these factors bearing on facilities requirements by the new curriculum will probably be that the same fractional distribution of needs as at present will result, or a slightly increased need for teaching facilities in affiliated hospitals could be required.

Additionally, however, expansion of the class size by 25% (to 200 students) could require an expansion of clinical teaching facilities in affiliated hospitals beyond the proportionate fraction of class expansion. This discrepancy could result from such factors as a proposed net increase in number of on-campus teaching beds which is less than the class size increase proposed, the difficulty in developing affiliated teaching facilities in the other health sciences thus a higher total density of clinical health sciences teaching in

on-campus clinical facilities, the necessary selectivity of proposed on-campus expansion leading in turn to selective creation or enlargement of other types of affiliated programs, and the limits imposed by the existing discrepancy in patient mix in the University Hospitals compared with off-campus facilities.

To meet the increased demands for off-campus clinical teaching facilities incurred by these qualitative and quantitative changes the University must assist its affiliates in every possible way. It will support the expansion of appropriate facilities in St. Paul-Ramsey and the Veterans Hospital for this purpose. It will assist Hennepin County General Hospital to achieve a new structure whose location and facilities for undergraduate teaching are in the best interests of the University program. Existing programs in private hospitals of the Twin Cities will be improved, and when appropriate expanded. New affiliations in private hospitals will also be considered.

The Education Policy Committee is presently developing detailed tactical plans for implementing the new curriculum. A referendum will be held September 9, 1969 to determine financing of a new facility for Hennepin County General Hospital. The development of these two issues are critical to establishment of finite planning for the clinical affiliated facilities.

## AGREEMENT OF AFFILIATION

between

THE REGENTS OF THE UNIVERSITY OF MINNESOTA

and

THE BOARD OF COMMISSIONERS, HENNEPIN COUNTY

In sharing the common goals of education, research, patient care and community service, it is deemed to the mutual advantage and benefit of the respective parties, their constituency and their purposes, to facilitate continuity of the longstanding relationship between the University of Minnesota and Hennepin County General Hospital, successor to Minneapolis General Hospital.

In pursuance of the aforesaid goals and in furtherance of Session Laws of 1963, Chapter 738, the act establishing the Hennepin County General Hospital providing for the hospital care and medical service of the poor and medically indigent, for emergency care of others, and for the purposes of instruction and promotion of scientific research promoting the welfare of patients, this AGREEMENT OF AFFILIATION is provided.

The following principles shall characterize the general relationships between the respective parties:

### I. Faculty and Hospital Staff Appointments

#### A. Power of Appointment

1. Appointment to the Medical Staff of HCGH is a function of HCGH. A member of the Medical Staff who will teach undergraduate medical students and/or Medical Fellows shall also be a member of the Faculty of the University of Minnesota Medical School.
2. Appointment to the Faculty of the Medical School is a function of the University. Prospective HCGH Medical Staff members with proposed teaching functions will be recommended by their respective Service Chiefs of HCGH for Faculty membership in the cognate Medical School Department. If approved by the Department, the recommendation will be forwarded for action by the Dean of the College of Medical Sciences, the President, and the Regents.
3. Service Chiefs at HCGH will be nominated for such posts by the Heads of the cognate Medical School Departments with the endorsement of the Dean and subject to the approval of the Medical Staff, Medical Director and Administrator of HCGH.

#### B. Categories of Faculty Membership

1. The Faculty serving full-time at HCGH is recognized as the equivalent of the Faculty serving full-time at the Medical Center with respect to clinical skill, teaching ability, and potential for scholarly

activity. Ideally, the rights, privileges, opportunities, and obligations of all Faculty members should be determined by their academic ranks, not by the locations in which they serve. Full equivalence of Faculty appointments should be the ultimate aim of both HCGH and the University. At the time of adoption of this statement, however, realistic account must be taken of the budgetary limitations of both institutions, as well as certain differences between them with respect to salary policies and related matters. For this reason, at least at the outset, Faculty appointments of full-time HCGH staff members must necessarily be subject to certain modifications as described in the following paragraphs. In any event, however, members of the Faculty serving as full-time members of the HCGH Staff will enjoy the same rights and privileges as other University Faculty members of equivalent rank with respect to participation in Department and Medical School Faculty meetings dealing with educational policy. Other aspects of their Faculty membership, including mode of compensation and inclusion under the University tenure code, will vary in accord with the specific type of appointment they hold.

## 2. Types of Full-time Appointments

- a. Regular University appointments. Names of individuals holding Regular University appointments will appear as primary items on their respective University Departmental budgets, and they will be included, without reservation, in the provisions of the University tenure code. They will receive their compensation in the form of a University paycheck, regardless of the source of the funds providing it. Compensation will, in most instances, include both a "basic salary", which will be the salary comparable to the salary paid comparable individuals serving full-time at the University of Minnesota Medical Center, and an "increment", the amount of which will be a matter for determination by HCGH within the context of its salary scale. University fringe benefits, notably participation in the University's retirement program, will be based on the level of the "basic salary" as defined herein with the exception of those individuals participating in the University's retirement program on January 1, 1964, who shall, subject to retirement program modifications and personal elections, have their University fringe benefits based on the level of total salary designated in University budgets for 1963-64, and shall so remain until the "basic salary" as herein defined exceeds the 1963-64 amount. Eligibility for Regular University appointments is limited to full-time Chiefs of those Services responsible for mandatory, full-time clerkships for undergraduate medical students.
- b. "Affiliated Hospital University" Appointments. The University will establish a special, separately identified budget account to be known as the "Hennepin County General Hospital Fellowship Program." The names of Faculty members designated as "Affiliated Hospital University" appointees will appear as primary items on

this budget, and they will not be included in the provisions of the University tenure code. Appointments will continue as long as HCGH is willing and able to continue its support. In all other respects, specifically including the various aspects of compensation, "Affiliated Hospitals University" appointees will be subject to the same considerations that apply to Regular University employees. Participation in University fringe benefits will be determined separately. Any faculty member serving full-time at HCGH may, with the concurrence of his HCGH Medical Director, University Department Head, and Dean of the Medical School, hold an "Affiliated Hospital University" appointment.

- c. Primary HCGH Appointments. Faculty members serving full-time at HCGH may elect to be primary appointees of HCGH. In such instances, compensation will be paid to them directly by HCGH and the University tenure code will not apply.

3. Volunteer University Faculty appointments will carry the titles Clinical Professor, Clinical Associate Professor, Clinical Assistant Professor, and Clinical Instructor. These carry no implications as to either compensation or tenure.

#### C. Sources of Budgetary Support

1. As indicated above, all Faculty members serving full-time at HCGH as either Regular University or Affiliated Hospital University appointees will receive their compensation in the form of a University paycheck. The respective proportions provided by the University and HCGH will be negotiated by the two institutions each year with respect to each individual appointee, and HCGH will then pay the agreed upon amount to the University. The actual proportion provided by the University is in no way related to or determinative of the individual's "basic salary" as defined in Paragraph B-2-a. above. The liability of the parties for providing resources for fringe benefits is to extend to each party in the proportion of its segment of the "basic salary." However, if, due to legal limitations, total contribution cannot be provided, HCGH shall make payment to the University, by separate check, of the maximum amounts applicable to any and all fringe benefits for a HCGH appointment, to provide its contribution to the fringe benefits allocable to its segment of "basic salary."

#### D. Private Consultation Practice

1. Faculty members serving full-time at HCGH, including both Regular and Affiliated Hospital University appointees, as defined in paragraphs B-2-a and B-2-b above, will be expected to observe the Regents' Statement of Policy concerning Private Consultation Practice in the College of Medical Sciences.

#### II. Interns

The selection, appointment, education, training, and supervision of interns at HCGH shall be the primary responsibility of HCGH Medical Staff.

#### III. Medical Fellows

The selection, appointment, assignment, education, training, and supervision

of Medical Fellows shall be a joint venture involving the cognate Medical School department head and HCGH Chief of Service, with primary responsibility for final determinations being the prerogative of the party with the respective accreditation listing, but with the understanding that all appointments as Medical Fellows are subject to the approval of the Dean of the Graduate School of the University of Minnesota.

IV. Medical Students and Patients

Medical students shall be responsibly involved in the management of the care of the patient under the supervision of the assigned HCGH Medical Staff; the medical students' activities shall include doing patient histories and complete physical examinations, stating tentative diagnosis, proposing diagnostic and therapeutic procedures, and proposing recommendations for discharge; and the course of patient care shall include outpatient and other extensions of its service as well as inpatient care to the fullest degree possible.

V. Referral of Hennepin County Patients

Referral of patients from Hennepin County for hospital care and medical service is of key importance to the operation of both HCGH and the University Hospitals. Policies concerning referral of patients from Hennepin County and the determination of their acceptance for care will be developed by and implemented under the continuing direction of the Affiliation Review Committee (see IX below) or an appropriate subcommittee thereof consisting of representatives of the two hospitals.

VI. Patients and Teaching

All patients admitted to HCGH will be participants in the teaching program, except where, in the opinion of the responsible physician, such incorporation would jeopardize the welfare of the patient.

VII. Patient Care

HCGH is to maintain the highest possible standards of care for its patients, and the Medical School shall assist in this effort since the participation of medical students in the processes of patient care is an integral part of medical education.

VIII. Facilities and Services

Available facilities and services of the respective parties shall be periodically reviewed to encourage appropriate and optimum cross-utilization as well as for adequacy in fostering improved patient care and medical education.

IX. Affiliation Review Committee

An affiliation Review Committee shall concern itself with the continuing implementation of the principles of this Agreement, to review program activities, to effect continued improvement in the affiliation program, and to report on its progress. The Committee shall meet at least biannually and be composed of the following (or their authorized representatives):

Dean of the Medical School,  
Medical Director of HCGH,  
Administrator of University of Minnesota Hospital,  
Administrator of HCGH,  
Medical School and HCGH:

four representatives of the HCGH staff and  
four representatives of the University  
Hospitals, to be selected by each institution  
in accord with its own procedures.

- X. Subject to the availability of appropriations for approved program activities, ADDENDUMS to this AGREEMENT OF AFFILIATION are authorized to facilitate day-to-day and year-to-year execution of the common goals stated herein. The ADDENDUMS shall be sufficiently detailed in content to explain the basic elements of understanding and obligation, financial and otherwise. All ADDENDUMS shall bear the initiating concurring signatures of the respective Medical School department head and HCGH Chief of Service, the approval signatures of the Dean of the Medical School and of the Medical Director of HCGH or their authorized representatives, and of the Administrator of HCGH and whomever the University of Minnesota designates to authorize the commitment of available funds.
- XI. This agreement shall be effective July 1, 1964, and shall continue from year to year without renewal notice. In the event either party wishes to propose a major change in or termination of the Agreement, adequate notice shall be given -- for a major change, three calendar months' notice in writing would be deemed adequate; and in the event of termination, one calendar year's notice must be given.

Recommended:

Regents of the University of Minnesota

\_\_\_\_\_  
Dean of the College of Medical Sciences

\_\_\_\_\_  
Vice President, Business Administration

Hennepin County Board of Commissioners

\_\_\_\_\_  
Administrator, Hennepin County General  
Hospital

\_\_\_\_\_  
Chairman

AFFILIATION AGREEMENT BETWEEN  
ST. PAUL-RAMSEY HOSPITAL AND THE  
UNIVERSITY OF MINNESOTA

I

What appears below is an agreement of affiliation between St. Paul-Ramsey Hospital and the University of Minnesota. As such, it is the statement of an affiliation between two institutions and two communities dedicated to medical education and the advancement of medical knowledge through patient care and community service, medical education, and research.

The St. Paul-Ramsey Medical Staff and Administration and the Ramsey County Welfare Board recognize that a teaching affiliation with the Medical School is essential if St. Paul-Ramsey Hospital is to provide a perpetuating high quality of medical-hospital care and services to the citizens of St. Paul and Ramsey County and a supply of competent professional personnel. The Hospital places a high value on the Medical School for its ability to aid continuously in defining standards of medical service, education, and research and will utilize the University in such a way as to fulfill the educational standards expected of it. In turn the University of Minnesota will aid in whatever way it sees possible and appropriate to facilitate the objectives of this agreement. The University and its College of Medical Sciences need the facilities and services which a teaching hospital can provide through its wards, clinics, and medical staff for the teaching of clinical medicine.

A key feature of this affiliation is the appropriate appointment and function of the herein described Joint Educational Council whose responsibility it will be to know the commitment contained in this agreement and the appropriate functions of both institutions with respect to this agreement. It is of paramount importance that the Council be duly and appropriately selected and so composed that its decisions command the respect of the University of Minnesota and St. Paul-Ramsey Hospital, alike, for it will be a formal and policy shaping agency to this agreement. It will have the responsibility of periodic formal revision of this agreement.

It shall be recognized that shared goals can be realized most effectively if the affiliation is basically an institution-to-institution agreement providing a framework of meaningful support and guidance to the important transactions between departments and divisions of each institution. There will be instances, however, in which at any given time certain departments or divisions of the Hospital and Medical School will not be directly involved in responsibility for a teaching program.

Recognizing that any agreement of affiliation acceptable to both parties is quite likely to require amendments and changes in the current bylaws of the Hospital Medical Staff and in equivalent documents of the College of Medical Sciences, such amendments shall be consonant with the Law and shall not force either institution to exceed its financial resources.

Finally, it has been well said that no institution can be seriously or justly contemplating entering into an educational agreement unless it has education in mind.

The following principles shall characterize the general relationships between the respective parties:

## II

### Faculty and Hospital Staff Appointments

#### A. Power of Appointment.

1. Appointment to the medical staff of St. Paul-Ramsey Hospital is a function of St. Paul-Ramsey Hospital.
2. Appointment to the Faculty of the University of Minnesota Medical School is a function of the University.
3. All departmental or division Service Chiefs shall be nominated by the Head of the cognate Department at the University of Minnesota Medical School after consultation with a committee of the medical staff selected by the Chief of Staff at St. Paul-Ramsey Hospital. These nominations shall then be forwarded to the Executive Committee of the Hospital for approval and then to the Governing Body of the Hospital,

the Dean of the College of Medical Sciences, the President and the Board of Regents for their final approval and appointment.

4. In addition to the appointment of Service Chief as described above and beginning with the date that this agreement of affiliation is formally approved, it is expected that anyone appointed to the Medical Staff of St. Paul-Ramsey Hospital shall be qualified for an appointment to the faculty of the University College of Medical Sciences and shall indeed be so appointed. The prospective appointee shall be recommended by their respective Service Chiefs after they have demonstrated their ability to meet the requirements of such membership. If approved by the cognate Department Head at the Medical School, the recommendation will be forwarded for action by the St. Paul-Ramsey Executive Committee, the Ramsey County Welfare Board, the Dean of the College of Medical Sciences, the President and the Board of Regents.

5. The medical staff members of the Hospital and the administration recognizes by merit of dual appointments the holders of such appointments are responsible to both institutions in terms of the objectives, goals and responsibilities of each institution.

6. In any situation where the professional competence of any member of the full time staff at St. Paul-Ramsey Hospital is seriously questioned, a two-thirds majority of the Executive Committee of that Hospital will refer the matter to the Joint Educational Council.

B. Qualifications of Medical Staff Appointments and University Faculty Membership.

1. It is recognized that members of the Faculty of the Medical School serving as full time Staff at St. Paul-Ramsey Hospital are the equivalent of the faculty serving full time at the Medical School with respect to clinical skill, teaching ability, and potential for scholarly activities and therefore shall enjoy, in general, the same rights and privileges and have the same obligations as other comparable University Faculty

members. The nature and extent of the rights, privileges and obligations will be negotiated in individual instances through the Joint Educational Council and will take account of legal and financial limitations of the University and of St. Paul-Ramsey Hospital.

2. Full time University Appointments.

(a) Full time members of the Medical Staff of St. Paul-Ramsey Hospital may wish to receive their compensation through the University, and they may do so at their option, regardless of whether the actual source of such compensation is the University, St. Paul-Ramsey Hospital, a research grant, or a combination of such sources.

(b) The policies determining such appointments shall be the same as those applied throughout the College of Medical Sciences. In particular, the statement entitled "General Policies Concerning Support of Faculty Positions in the College of Medical Sciences with Special Reference to Utilization of Non-Regular Funds" and dated August 1, 1966, shall apply. Funds provided by St. Paul-Ramsey Hospital are "non-regular" funds.

(c) It is recognized that, for a number of reasons, the salary scale for members of the full time Medical Staff of St. Paul-Ramsey Hospital is higher than that for faculty members serving full time at the University of Minnesota Medical Center. For this reason their compensation will, in most instances, include both a "basic salary," which will be the salary comparable to the salary paid comparable individuals serving full time at the University of Minnesota Medical Center, and an additional amount of basic salary to be determined by the County Welfare Board. University fringe benefits, notably participation in the University's retirement program, will be based on the level of the "basic salary" as determined by the University of Minnesota Medical Center.

(d) Alternately, St. Paul-Ramsey Hospital Staff members serving full time at the Hospital may prefer to receive all of their basic compensation directly from the Ramsey County Welfare Board, in which event the University fringe benefits will not apply.

3. Other University Faculty appointments. Members of the Hospital's Medical Staff participating in the teaching program at St. Paul-Ramsey Hospital on a part time and usually non-compensated basis will be expected as of the date this agreement of affiliation is formally approved to qualify for appointment to the Faculty of the College of Medical Sciences. They will be appointed Clinical Professor, Clinical Associate Professor, Clinical Assistant Professor and Clinical Instructor. Such appointments as far as this agreement is concerned carry no implications as to either compensation, or fringe benefits.

### III

#### Sources of Budgetary Support

The governing body of the St. Paul-Ramsey Hospital recognizes that excellence in patient care, community services, and health science education pre-supposes adequate financial support in all areas of administration and staffing of St. Paul-Ramsey Hospital. Likewise, the University recognizes its fundamental obligation to provide financial support of the educational program for the undergraduate medical student, that is, the student pursuing the course leading to the M.D. degree. Faculty members serving full time at St. Paul-Ramsey Hospital may receive their compensation in the form of a University pay check in accord with Paragraph B-2 above. The respective proportions provided by the University and St. Paul-Ramsey Hospital will be negotiated each year by the two institutions with respect to the individual appointee and St. Paul-Ramsey Hospital will then pay the agreed upon amount to the University. The actual proportion provided by the University is in no way related to or determinative of the individual's "basic salary." The liability of the University for provision of fringe benefits will extend only to that segment

of the basic salary actually provided by the University. St. Paul-Ramsey Hospital will include in its payment to the University the amount required to provide fringe benefits in relation to the segment of basic salary actually provided by St. Paul-Ramsey Hospital.

#### IV

#### The Joint Educational Council

##### A. Responsibilities

1. The primary responsibility of the Council shall be the evaluation and arbitration concerning undergraduate and postgraduate medical education programs within the confines of this agreement. Their deliberations shall encompass the practices of both institutions insofar as this agreement applies.
2. Being constituted of members selected from among key staff members of both institutions, it is the formal arbitrating body in all matters relating to this agreement of affiliation, including any differences that may arise and any modifications of the agreement that may be deemed necessary or advisable.
3. The recommendations of all meetings will be forwarded in writing to the St. Paul-Ramsey Hospital Superintendent, Chief of Staff, Chairman of the Ramsey County Welfare Board, and the Dean of the College of Medical Sciences. Inasmuch as such recommendations are specifically given for the educational policy to be pursued by both institutions in regard to medical education at St. Paul-Ramsey Hospital, it shall be the specific duty of the Superintendent of St. Paul-Ramsey Hospital and the Dean of the University College of Medical Sciences to forward in writing within a reasonable period of time after the receipt of such recommendation, positive or negative actions they respectively intend to take concerning the recommendations along with the rationale for the action.

4. Whenever dismissal of any dually appointed medical staff member is contemplated, such deliberation shall be forwarded to the Joint Educational Council for its recommendation.
5. The Joint Educational Council will honor requests of Service Chiefs at both St. Paul-Ramsey Hospital and the College of Medical Sciences for appearance before the Council to present their views regarding educational programs at St. Paul-Ramsey Hospital. It is further agreed that no matter of direct concern to a Service Chief at St. Paul-Ramsey Hospital shall be discussed without its being formally placed on the agenda, and without the presence of the Service Chief concerned.
6. The Council shall periodically review the affiliation agreement and make recommendations for changing it where deemed necessary.

B. Composition and Method of Selection.

To ease the problem of assembly and communication, the Council shall be comprised of not more than nine members. They shall be as indicated in the following:

- One Ramsey County Welfare Board member selected by that Board
- One Ramsey County Welfare Board Hospital Advisory Committee member selected by that committee.
- One St. Paul-Ramsey Hospital Administrator (the Superintendent or his designee)
- Two St. Paul-Ramsey Hospital full time staff members selected by St. Paul-Ramsey Hospital Executive Committee
- One St. Paul-Ramsey Hospital visiting staff member selected by St. Paul-Ramsey Hospital Executive Committee
- One Dean of the Medical School or his designee
- Two members of the Faculty of the University of Minnesota Medical School to be selected by the Administrative Board of the Medical School

C. Meetings.

The Council shall meet no less than bimonthly during the entire year. Its chairman shall be the Dean of the Medical School or his designee. The Council shall make its own provisions for the calling of special meetings.

Undergraduate and Postgraduate Educational Programs

## A. Medical Students.

The assignment, rotation, and program for medical students shall be the joint responsibility of the University Department Head and the cognate Service Chief. Assigned undergraduate medical students shall be responsibly involved in the management of the care of the patient under the supervision of the St. Paul-Ramsey Hospital Medical Staff. The medical students' activities shall include doing patient histories and physical examinations, stating tentative diagnosis, proposing diagnostic and therapeutic procedures, and proposing recommendations for discharge, and the course of the patient care shall include outpatient and other extensions of its service as well as inpatient care to the fullest degree possible.

## B. Medical Interns.

Medical interns shall practice medicine at St. Paul-Ramsey Hospital under the direct supervision of the Service Chiefs and the intern and Resident Committee of the Hospital. Since the medical intern program is one of postgraduate education the intern educational program shall come up for periodic evaluation and recommendation by the Joint Educational Council. Otherwise the selection, appointment, training, supervision and remuneration of interns at St. Paul-Ramsey Hospital shall be the primary responsibility of St. Paul-Ramsey Hospital, its staff and governing body.

## C. Medical Fellows.

Selection, appointment, assignment, education, supervision, and remuneration of medical fellows shall be a joint venture involving the cognate Medical School Department Head and the St. Paul-Ramsey Hospital Chief of Service, with primary responsibility for final determinations being the prerogative of the party with the official accreditation listing. All appointments as medical fellows, however, must have the additional approval of the Dean of the Graduate School of the University of Minnesota for

VI  
Patients and Teaching

All patients admitted to St. Paul-Ramsey Hospital shall be available for participation in the teaching program, unless objecting, and except where, in the opinion of the responsible physician, such incorporation would jeopardize the welfare of the patient.

VII  
Enactment, Revision, and Termination of Agreement

This agreement shall be effective immediately upon its proper ratification by the responsible parties designated immediately below. It shall continue from year to year without renewal notice. Its periodic revision shall be the primary responsibility of the Joint Educational Council. In the event either party wishes to propose a major change in the agreement written notice given three months in advance to the Joint Educational Council would be adequate. In the event of termination, three years notice in advance shall be given.

UNIVERSITY OF MINNESOTA COLLEGE OF  
MEDICAL SCIENCES

By \_\_\_\_\_  
Dean of the College of Medical Sciences

UNIVERSITY OF MINNESOTA

By \_\_\_\_\_  
Vice President, Business Administration

SAINT PAUL-RAMSEY HOSPITAL

By \_\_\_\_\_  
Chief of Medical Staff

SAINT PAUL-RAMSEY HOSPITAL

By \_\_\_\_\_  
Superintendent

RAMSEY COUNTY WELFARE BOARD

By \_\_\_\_\_  
Chairman

Dated: November \_\_\_\_\_, 1966

Part I C Organization

RELATIONSHIPS TO CLINICAL PROGRAMS

Overall curricular development and control is vested with the Education Policy Committee of the faculty. Clinical programs are developed in the various clinical departments within the guidelines established by the objectives and goals of the curriculum. The Council of Clinical Sciences and Council of Basic Sciences consider problems of the educational needs of the school within the curricular framework. The individual teaching programs, conducted in the various affiliated hospitals, also fall within purview of the appropriate hospital committees appointed by the Dean of the College of Medical Sciences. These committees, the Joint Educational Council of the St. Paul-Ramsey Hospital, the Joint Education Advisory Committee of the Hennepin County General Hospital and the Dean's Committee of the Veterans Administration Hospital, supervise and coordinate the educational programs within these hospitals.

UNIVERSITY OF MINNESOTA  
 Medical School  
 Projected Expenditures Through 1975

This table of data follows the format for itemization of expenditures presented in reports to the Liaison Committee on Medical Education, American Medical Association - Association of American Medical Colleges.

	1968-69	1969-70	1970-71
A. I. Expenditures for Sponsored Medical School Programs*			
a. Federally-Sponsored Teaching and Training	\$ 4,122,990	\$ 4,535,289	\$ 4,988,818
b. Non-Federal Sponsored Teaching and Training	<u>902,266</u>	<u>992,493</u>	<u>1,091,742</u>
TOTAL, Sponsored Teaching and Training Programs	<u>5,025,256</u>	<u>5,527,782</u>	<u>6,080,560</u>
c. Federally Sponsored Research	10,451,213	11,496,334	12,645,967
d. State, County and City Sponsored Research	145,364	159,900	175,890
e.-h. Private Gifts and Grants Sponsoring Research	<u>2,740,711</u>	<u>3,014,782</u>	<u>3,316,260</u>
TOTAL, Sponsored Research	<u>13,337,288</u>	<u>14,671,016</u>	<u>16,138,117</u>
j. Other Sponsored Programs-Non Federal	<u>11,106</u>	<u>12,217</u>	<u>13,439</u>
k. TOTAL, Sponsored Medical School Program*	<u>18,373,650</u>	<u>20,211,015</u>	<u>22,232,116</u>
A. II. Expenditures for Regular Teaching, Research, and Service Programs of the Medical School			
a. & b. Expenditures from Medical School Budget**	3,953,017	4,751,553	6,002,175

UNIVERSITY OF MINNESOTA  
 Medical School  
 . Projected Expenditures Through 1975

This table of data follows the format for itemization of expenditures presented in reports to the Liaison Committee on Medical Education, American Medical Association - Association of American Medical Colleges.

	1971-72	1972-73	1973-74	1974-75
A. I. Expenditures for Sponsored Medical School Programs*				
a. Federally-Sponsored Teaching and Training	\$ 5,487,700	\$ 6,036,470	\$ 6,766,279	\$ 7,558,610
b. Non-Federal Sponsored Teaching and Training	<u>1,200,916</u>	<u>1,321,008</u>	<u>1,480,718</u>	<u>1,654,110</u>
TOTAL, Sponsored Teaching and Training Programs	<u>6,688,616</u>	<u>7,357,478</u>	<u>8,246,997</u>	<u>9,212,720</u>
c. Federally Sponsored Research	13,910,564	15,301,620	18,151,586	20,277,137
d. State, County and City Sponsored Research	193,479	212,827	238,558	266,493
e.-h. Private Gifts and Grants Sponsoring Research	<u>3,647,886</u>	<u>4,012,675</u>	<u>4,497,807</u>	<u>5,024,500</u>
TOTAL, Sponsored Research	<u>17,751,929</u>	<u>19,527,122</u>	<u>22,887,951</u>	<u>25,568,130</u>
j. Other Sponsored Programs-Non Federal	<u>14,783</u>	<u>16,261</u>	<u>18,227</u>	<u>20,361</u>
k. TOTAL, Sponsored Medical School Program*	<u>24,455,328</u>	<u>26,900,861</u>	<u>31,153,175</u>	<u>34,801,211</u>
A.II. Expenditures for Regular Teaching, Research, and Service Programs of the Medical School				
a. & b. Expenditures from Medical School Budget**	7,240,910	8,542,924	9,707,442	10,886,295

UNIVERSITY OF MINNESOTA  
 Medical School  
 Projected Expenditures Through 1975  
 (continued)

	1968-69	1969-70	1970-71
c. Administrative Buildings and Grounds, Library and other Medical School costs paid by the University but not included in item a.***	\$ 2,875,630	\$ 3,048,168	\$ 3,231,058
d. Teaching Hospitals or Clinics Costs Related to Teaching****	3,994,290	4,233,947	4,487,984
d. (4) Special Unrestricted Funds	12,000	79,500	30,000
d. (5) Other	<u>3,000</u>	<u>3,000</u>	<u>3,000</u>
TOTAL Expenditures for Regular Medical School Programs	<u>10,837,937</u>	<u>12,116,168</u>	<u>13,754,217</u>
TOTAL Medical School Costs	<u>29,211,587</u>	<u>32,327,183</u>	<u>35,986,333</u>

\* See page M-55 C

UNIVERSITY OF MINNESOTA  
 Medical School,  
 Projected Expenditures Through 1975  
 (continued)

	1971-72	1972-73	1973-74	1974-75
c. Administrative Buildings and Grounds, Library and other	\$ 3,424,921	\$ 3,630,416	\$ 3,848,241	\$ 4,079,135
Medical School costs paid by the University but not included in item a.***				
d. Teaching Hospitals or Clinics Costs Related to Teaching****	4,757,263	5,042,699	5,345,261	5,665,977
d. (4) Special Unrestricted Funds	30,000	30,000	30,000	30,000
d. (5) Other	<u>3,000</u>	<u>3,000</u>	<u>3,000</u>	<u>3,000</u>
TOTAL Expenditures for Regular Medical School Programs	<u>15,456,094</u>	<u>17,249,039</u>	<u>18,933,944</u>	<u>20,664,407</u>
TOTAL Medical School Costs	<u>39,911,422</u>	<u>44,149,900</u>	<u>50,087,119</u>	<u>55,465,618</u>

\* See page M-55 C

UNIVERSITY OF MINNESOTA

Medical School

Projected Expenditures through 1975

\* Amounts projected in these categories are based on a percentage increase of 10 percent per year for the first four years and for the last two years are related to annual increments in funds for academic new positions, plus an annual 6 percent increase in academic salaries.

\*\* The projected Medical School budget has been increased annually in accordance with the following assumptions:

A. Annual academic salary increases of 6 percent.

B. Special funding for Family Practice:

\$200,000 in 1969-70 and additional increment of  
\$150,000 in 1970-71.

C. Further new academic position funds required to bring funding to faculty staffing standards presented by the University of Minnesota.

1969-70	\$225,000
1970-71	453,600
1971-72	476,280
1972-73	499,500

D. New faculty positions required by student enrollment increases

1973-74	\$342,250
1974-75	359,362

This represents one-half of the new faculty positions required by student enrollment increases. The balance will be added during fiscal years 1975-76 and 1976-77.

E. Funds for Civil Service new positions = 0.648 times amounts allocated for academic new positions.

F. Civil Service salary increases, alternating 4 and 8 percent each year, starting with 8 percent in 1969-70.

\*\*\* These amounts have computed through application of a standard formula developed by the University of Minnesota; an annual 6 percent increment has been included.

\*\*\*\* This category includes items in the University of Minnesota Hospitals budget that have been reported as appropriately chargeable to Medical School educational programs. This category is currently under scrutiny as to its relationship to the educational program.

ACCREDITATION

AMA-AAMC Liaison Committee on Medical Education Accreditation visit: January 20 - 23, 1969. Proposed date for next visit: 1979.

An official accreditation report has not been received, as yet.

The following item regarding facilities is quoted from the letter of the Chairman of the site visit, Dr. C. Arden Miller, to Dr. Malcolm Moos, President of the University of Minnesota:

"The committee commends the university for its responsiveness to public need by developing plans to admit 200 students. The increase seems in every way justified and possible, provided of course that additional resources become available. Requests now pending represent budget and buildings necessary to correct existing deficiencies, as well as to expand enrollment. The requests are thoughtfully developed, well supported, and probably adequate to anticipated expansions. Authorization for the expanded enrollment is especially important to the school of medicine as it is the device by which relief for current as well as anticipated deficiencies is sought."

"Proposed physical expansions are clearly necessary and probably they are sufficient; they are not optimal. Responsible administrators appear to have scaled down their building plans to conform to anticipated realities of financing, rather than to actual need. When the entire building program is completed basic science departments will have 250,000 gross square feet\* of space. This amount is currently recommended for new medical schools of somewhat smaller enrollment than Minnesota's. The building plans, even if entirely implemented, clearly will not eliminate the medical school's space problems."

Letter of reasonable assurance for continuing accreditation of expansion program has been requested on the basis of the January, 1969, Accreditation Survey and should be in hand by the time of the proposed site visit.

\* Dr. Miller misunderstood the appropriate square footage which should be 250,000 net square feet. ROM

CURRICULUM

The information provided in the following pages describes the 1968-69 curriculum, which has been a prototype for the last decade, and an extensive modification in total curriculum which has been planned to commence in the fall of 1969.

Part I G Program

CURRICULUM

The 1969-70 curriculum is an interim one since the current second year class will have had the first year program of the old curriculum. This is true also of the current third class which will have had 2 years of the old curriculum. The fourth year of the current curriculum is a prototype of Phase D of the new curriculum. The entering 1969-70 class will be the first to take advantage of Phase A of the new curriculum.

Course No.	Subject	Department	FIRST YEAR			Total
			Lecture	Number of Hours		
				Lab	Clinic	
100,101	Gross human <u>Anatomy</u>	<u>Anatomy</u>	<u>70</u>	<u>210</u>	Several <u>Included</u>	<u>280</u>
103,104	Human <u>Histology</u>	<u>Anatomy</u>	<u>60</u>	<u>80</u>		<u>140</u>
107	<u>Embryology</u>	<u>Anatomy</u>	<u>30</u>	<u>40</u>	Several <u>Included</u>	<u>70</u>
100,101 106	<u>Biochemistry</u> General	<u>Biochemistry</u>	<u>108</u>	<u>114</u>		<u>222</u>
	<u>Physiology</u>	<u>Physiology</u>	<u>15</u>	<u>15</u>		<u>30</u>
111,106	Neuroanatomy- <u>Neurophysiology</u>	<u>Anatomy</u> <u>Physiology</u>	<u>54</u>	<u>72</u>	Several <u>Included</u>	<u>126</u>
107	Radiobiology, <u>Biophysics</u>	<u>Nuclear Medicine,</u> <u>Radiology</u>	<u>10</u>	<u>-</u>		<u>10</u>
120	Human Behavior	<u>Clinical Psychology,</u> <u>Psychiatry</u>	<u>30</u>	<u>-</u>		<u>30</u>

Course No.	Subject	Department	SECOND YEAR			Total
			Lecture	Number of Hours		
				Lab	Clinic	
105,106	Microbiology <u>Infectious Diseases</u>	<u>Microbiology</u>	<u>100</u>	<u>80</u>	Several <u>Included</u>	<u>180</u>
101,102	General & Special <u>Pathology</u>	<u>Pathology</u>	<u>100</u>	<u>160</u>		<u>260</u>
107	Systemic <u>Physiology</u>	<u>Physiology</u>	<u>50</u>	<u>45</u>		<u>95</u>
103,104	<u>Pharmacology</u>	<u>Pharmacology</u>	<u>90</u>	<u>60</u>		<u>150</u>
124	Introduction to Obstetrics & Gynecology,	<u>Obstetrics &amp; Gynecology</u>	<u>10</u>	<u>-</u>		<u>10</u>
101	Orientation in	<u>Medicine, Pediatrics,</u>				
101	<u>Clinical Medicine &amp; Lab. Medicine</u>		<u>117</u>	<u>46</u>	<u>80</u>	<u>243</u>
	Clinical Laboratory Medicine					

SECOND YEAR

<u>Course No.</u>	<u>Subject</u>	<u>Department</u>	<u>Lecture</u>	<u>Lab</u>	<u>Clinic</u>	<u>Total</u>
121	Introduction to Surgery	Surgery	10	-		10
121	Introduction to Psychiatry	Psychiatry	30	-		30
100	Public Health & Preventive Medicine	Public Health	60	-		60
90	Biostatistics Biometry	Public Health	20	20		40

THIRD YEAR CLERKSHIPS

Subject	Department	Inpatient or Outpatient	No. of weeks in Clerkship	No. of days per week	Average Hours Per Day	Average No. of New Patients Weekly per Student	Average No. of Total Patients Weekly per Student
<u>Internal Medicine</u>	<u>Medicine</u>	<u>Both</u>	<u>12</u>	<u>4.5</u>	<u>8 plus calls</u>	<u>3-4</u>	<u>7-8</u>
<u>Surgery</u>	<u>Surgery</u>	<u>Both</u>	<u>12</u>	<u>4.5</u>	<u>8 plus calls</u>	<u>3-4</u>	<u>8</u>
<u>Pediatrics</u>	<u>Pediatrics</u>	<u>Both</u>	<u>8</u>	<u>4.5</u>	<u>8 plus calls</u>	<u>3-4</u>	<u>6</u>
<u>Obstetrics &amp; Gynecology</u>	<u>Obstetrics &amp; Gynecology</u>	<u>Both</u>	<u>8</u>	<u>4.5</u>	<u>8 plus calls</u>	<u>4 Obstetrics 3-4 Gynecology</u>	<u>8</u>
<u>Psychiatry</u>	<u>Psychiatry</u>	<u>Both</u>	<u>8</u>	<u>3</u>	<u>8</u>	<u>2</u>	<u>4</u>
<u>Neurology</u>	<u>Neurology</u>	<u>Both</u>	<u>8</u>	<u>3</u>	<u>8</u>	<u>3</u>	<u>6</u>

All third year clerkships are scheduled as block assignments. The student's educational attention and responsibility are focused almost completely on his current clinical clerkship assignment throughout the week, with the single exception of one-half day of lectures for the entire class weekly.

THIRD YEAR (Other than Clerkship)

Course Number	Subject	Department	Number of Lecture Hours	Total
104	<u>Internal Medicine</u>	<u>Medicine</u>	<u>24</u>	<u>24</u>
120	<u>Pediatrics</u>	<u>Pediatrics</u>	<u>24</u>	<u>24</u>
129	<u>General Surgery</u>	<u>Surgery</u>	<u>12</u>	<u>12</u>
120	<u>Obstetrics &amp; Gynecology</u>	<u>Obstetrics &amp; Gynecology</u>	<u>48</u>	<u>48</u>
101	<u>Neurology</u>	<u>Neurology</u>	<u>48</u>	<u>48</u>
123	<u>Dermatology</u>	<u>Dermatology</u>	<u>24</u>	<u>24</u>
100	<u>Ophthalmology</u>	<u>Ophthalmology</u>	<u>24</u>	<u>24</u>
127	<u>Neurosurgery</u>	<u>Neurosurgery</u>	<u>11</u>	<u>11</u>
173	<u>Urology</u>	<u>Surgery</u>	<u>11</u>	<u>11</u>
122	<u>Orthopedic Surgery</u>	<u>Orthopedic Surgery</u>	<u>11</u>	<u>11</u>

FOURTH YEAR

There are no formal, required lecture hours in the fourth year program. The fourth year is now entirely elective along a pathway selected with the frequent advice and consultation of a faculty adviser.

At the end of 1968 the Executive Faculty of the Medical School approved a new curriculum to be implemented starting September, 1969. This approval followed several years of intensive planning by faculty and students under the auspices of the Educational Policy Committee of the Executive Faculty.

Because of the explosion in medical knowledge, the public demand for better medical care, the changes in postgraduate training which dictate that all physicians specialize, and the importance of developing student attitudes which are conducive to the improvement of the medical profession and of health care delivery, the Educational Policy Committee formulated certain goals to be satisfied in the new curriculum.

#### Goal of FLEXIBILITY

To achieve this goal, a three-fold approach has been incorporated: 1) the curriculum will consist of a core of basic medical and clinical science knowledge constituting a part of the medical education of all physicians. It will be followed by continued study and training along "tracks" planned by the student and his advisor from elective offerings related to the student's individual interest; 2) elective courses will be taken concurrently with the later quarters of the core curriculum; 3) selected students will be given the option of completing medical school in three calendar years.

#### Goal of STUDENT AS LEARNER

To achieve this goal, provision has been made for the student to involve himself early in his student career by selecting certain experiences, such as those relating to the early introduction to the patient, on an optional basis. Later, in Phase B he must not only select a certain minimum number of elective offerings but must to a great extent plan and structure his day to maximize his opportunities for studying and learning. In Phase D,

the student must select and develop a program within a track.

Goal of RELEVANCE

Relevance (a traceable, significant logical connection) of the medical education to the ultimate goal of patient care will be dramatized in the experiences in the introduction to the patient where clinical problems in a variety of settings will be shown to students from the very start of their medical education. Relevance and importance of the basic medical sciences to clinical medicine will be built into the basic-clinical correlations used as examples in Phase A, in interdisciplinary teaching sections in Phase B, and by including basic science electives in Phase D.

Goal of IMPROVED COMMUNICATION AMONG FACULTY AND BETWEEN FACULTY AND STUDENT

The most powerful mechanism for bringing the faculty together and improving communication between individuals with similar interest in several departments will be the teaching section method of curriculum planning and presentation in Phase B. The establishment of an effective advisor system will help to bridge the gap between student and faculty.

Goal of PREPARATION FOR THE FUTURE OF MEDICAL PRACTICE

The revolutionary social changes in the world together with the rapid advance in science and technology make it impossible to predict the nature of medical practice in the future. The curriculum will develop in our students the desire for continuing education so that they may be prepared to administer contemporary health care.

Goal of HUMANISM IN MEDICAL PRACTICE

To this end the student will be exposed early to man and will develop an understanding of his inner psychological workings and his relationship to society. This involves early exposure to the behavioral sciences and early exposure to patients in a setting which places emphasis on an understanding of their human problems.

GENERAL DESCRIPTION OF THE CURRICULUM

The curriculum for the Doctor of Medicine degree is to be organized into a core program for all students composed of a Phase A of 3 academic quarters and a Phase B of 5 academic quarters in length. On completion of this core program, the student is to begin an individualized program ("pathway" or "track") which will be 3 academic quarters or 5 academic quarters in length, depending on the span of the student's entire program. The standard curriculum for the degree of Doctor of Medicine will be 13 academic quarters, to be completed in less than 4 calendar years. Students will be considered, at their request, for completion of work for the M.D. degree in 11 academic quarters in less than 3 calendar years with the stipulation that the internship will be taken at a University or a major affiliated teaching hospital.

## Phase A

Phase A is planned for three academic quarters beginning in the fall. The major emphasis of the Phase A curriculum is a presentation of a core of material in five basic medical sciences, anatomy, biochemistry, physiology, microbiology and general pathology. In addition, there will be courses titled Introduction to the Patient and Behavioral Science. The content of the quarters will be as follows:

			<u>Hours/10 wk. qtr.</u>
Fall	--	Biochemistry	80
		Embryology	20
		Gross Anatomy (incl. introduction to Neuroanatomy)	105
		Histology	50
		Introduction to the Patient	40
		Behavioral Science	<u>20</u>
			315 (31.5 hrs./wk.)
Winter	--	Biochemistry	60
		Embryology	20
		Gross Anatomy	105
		Histology	50
		Introduction to the Patient	40
		Behavioral Science	<u>40</u>
			315 (31.5 hrs./wk.)
Spring	--	Introduction to the Patient	40
		Microbiology	120
		Pathology (General) - 1st five weeks	48
		Physiology	120
		Behavioral Science - last five weeks	<u>10</u>
			338 (34 hrs./wk.)

Since Phase A is due to be implemented in September, 1969, the necessary organization of the course schedule and curriculum is proceeding quickly. A recent report of the Phase A subcommittee outlining some specific plans for this Phase follows:

UNIVERSITY OF MINNESOTA  
MEDICAL SCHOOL

Subcommittee on Phase A

Assignment to the Subcommittee

The Subcommittee on Phase A was requested to study, develop, and propose a curriculum outline for the first phase of a medical educational program in the direction and spirit broadly suggested for Phase A--Introduction to Human Biology, as derived from discussions at the fall 1967 retreat of the Medical School Executive Faculty.

Working Objectives for Development of Phase A Curriculum

1. Phase A, the first of three inter-related stages in a medical "core" curriculum, should include presentation of a core program in the anatomical sciences, human physiology, fundamental biochemistry, and basic microbiology. Ideally, a common core program presents the minimum, essential, but adequate knowledge, both factual and conceptual, necessary for initial mastery and comprehension by every medical student, regardless of his eventual future professional direction or specialty.
2. Phase A should incorporate, wherever feasible and advantageous, correlation and integration of subject matter among logically related basic disciplines.
3. Phase A, in concentrating on fundamental information and concepts of human biology, should be consolidated and abbreviated into no more than a single academic year.
4. Courses in Phase A should accomplish reduction or elimination of any existing unnecessary overlap or duplication in subject matter coverage.
5. The Phase A curriculum should be planned in a manner to encourage and generate coordination and communication between basic medical sciences and relevant clinical fields.
6. Phase A should contribute in any effective, feasible way toward significant reduction in the total time span of medical education.
7. Early in the Phase A curriculum, future physicians should be introduced to and involved meaningfully with people having medical problems which can be effectively correlated with students' current learning in basic medical sciences. "He (the student) needs to be active in his area of concern and future responsibility, namely, in the care of people" (Cope, Oliver. Man, Mind, and Medicine, 1968).
8. In Phase A, medical students must be provided a broader and more thorough introduction to the relevant subject matter and tools of behavioral disciplines, in order that they might have a more solid, relevant foundation for future dealing with personal, social, cultural, and economic aspects of patient problems.

Note: The above statements express only certain specific objectives basic

## Subcommittee on Phase A

to the subcommittee's development of the Phase A segment of the curriculum. Assumed but not stated explicitly here are other, more general and inclusive objectives for the entire medical educational program.

### Implementation of Objectives in Proposed Phase A Curriculum

1. There has been a careful selectivity exercised in weighing and pruning subject matter to be presented in Phase A core, not merely a redistribution and reduction of total credits and clock hours assigned.
2. Three major anatomical sciences -- gross anatomy, embryology, and histology -- have been placed in direct relation to each other toward facilitation of effective and more complete integration of their common subject matter. Basic neurological sciences have also been closely correlated and interdigitated. Biochemistry and physiology have moved toward greater complementarity of topics in their curriculum.
3. Core physiology and microbiology, at least the basic introductory aspects, have been transferred forward from the second year into Phase A core. Correspondingly, it is assumed that certain aspects of basic science material will be included in the integrated systemic courses and topics of Phase B.
4. A major block of time, one half day weekly, has been designated for presentation of a new challenging program on "Introduction to Clinical Medicine and the Patient", intended to involve the embryonic physician in his own synthesis and correlation of basic sciences with clinical applications and in direct, personal confrontation with human illness and patient care.
5. Provision has been made for a substantial expansion of student attention to pertinent areas of behavioral disciplines as they contribute to and find application in medicine.
6. All proposed courses in Phase A are structured to present a major impact and to require extensive student commitment. Formerly minor allocations of teaching time (as isolated one-credit courses) have been incorporated into larger, major course programs.

PHASE A

Fall

Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
I		Histology	Behav Science	Histology		Introduction	
II		Histo	Behav Sci Gr	Bio-	Histo	to	
III		Lab		chem	Lab	Clinical	
IV	Biochem	A	Biochem	Lab A	B	Biochem	Medicine
V							
VI	Gross Anat	Embryology	Gross Anat	Embryology	Gross Anat		
VII	Gross	Biochem	Gross	Biochem	Gross		
VIII	Anat		Anat		Anat		
IX	Lab		Lab		Lab		

Hours in class = 31.5  
 Free time = 13.5 - 44

PHASE A

Winter

Hour	Monday	Tuesday		Wednesday	Thursday		Friday	Saturday
I		Histology		Behav Science	Histology		Behav Science	Introduction
II		Histo	Bio-	Behav Sci Gr	Bio-	Histo	Behav Sci Gr	to
III		Lab	chem		chem	Lab		Clinical
IV	Biochem	A	Lab B	Biochem	Lab A	B	Biochem	Medicine
V								
VI	Gross Anat	Embryology		Gross Anat	Embryology		Gross Anat	
VII	Gross			Gross			Gross	
VIII	Anat			Anat			Anat	
IX	Lab			Lab			Lab	

Hours in class = 31.5  
 Free time = 13.5 -44

PHASE A

Spring

Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
I	Physiol	Physiol	Physiol	Physiol	Physiol	Physiol
II	Microbiol	Microbiol	Microbiol	Microbiol	Microbiol	Introduction
III	Micro-	Path*	Path*	Micro	Path*	Microbiol
IV	biol	Phys	Lab	biol	Phys	Clinical
V	A	Lab	A	Lab B	Lab	Medicine
VI	Path*	A	Microbiol		B	Path*
VII	Path*	Micro-	Phys	Micro-	Path*	Phys
VIII	Lab	biol	Lab	biol	Lab	Lab
IX	A	Lab B	A	Lab A	B	B

Ave. hours in class = 34 - 44  
 Free time = 10

\* No pathology or lab last 5 weeks (Last 5 weeks scheduled by neuropsychiatry for 2 hours on Friday p.m. for clinical demonstrations).

## Phase B

Phase B is planned for five academic quarters beginning in the summer (the first quarter of the proposed Phase B would first be taught in summer, 1970). The Phase B curriculum will consist of a presentation of a core of material related to 16 organs, systems and topics which will be organized and presented by interdepartmental sections with emphasis on pathophysiology and general and basic concepts. Within Phase B, the student will continue his study of the behavior of man, will learn about the approach to clinical problem solving and begin to perfect his clinical skills on hospital and clinic patients. With the counsel of an advisor, he will choose some elective work which fits his developing interests.

The approximate order of presentation of the parts of Phase B is as follows (there is some overlap between quarters):

	<u>Sections</u>	<u>Approximate Hours</u>	
Summer (B <sub>1</sub> )	Student as Physician	69	
	Basic Pharmacology	43	
	Cardiovascular	22	
	Blood I	32	
	Respiratory	22	
	Behavior of Man	20	
	Renal	<u>25</u>	
			Total - 233

Student as Physician There is a concentration of lectures and clinical work in the first three weeks to provide an introduction to the approach to the patient, history taking, and physical diagnosis. This is followed by nearly three quarters (B<sub>1</sub>, B<sub>2</sub>, B<sub>3</sub>) during which the student is assigned three hours per week (two hours for patient evaluation, one hour for tutorial) and two quarters (B<sub>4</sub> and B<sub>5</sub>) with 6 and 9 hours per week respectively.

Within this entire large section, which represents nearly one-third of the scheduled hours in Phase B, the student will not only learn the essential skills necessary to begin to study patients but will be guided through clinical problem solving experiences on patients of all ages, including neonatal patients with various medical, surgical and obstetrical conditions. It is anticipated that very detailed planning of this section will be essential in order to provide the right kind of clinical experiences in some relation to the organs and systems under study at that time, in order to effectively weave in knowledge and appreciation of the importance of the X-ray and the clinical laboratory (including personal experience with certain common laboratory examinations) and in order to control the quality of the tutorial experiences.

Basic pharmacology The lectures are to be given during the first month of Phase B. Laboratory sessions are placed within several quarters of Phase B to provide maximum possibility for correlation of laboratory demonstrations with the organ, system sections. Some experiments will be designed to illustrate important principles of biometry.

Cardiovascular, Respiratory, Renal These systems to be studied during the first quarter of Phase B might be presented in a series of lectures or conferences over a one month span or longer, depending on the requirements of each teaching section.

Here is an example of one week planned by the Cardiovascular Section:

Monday: Embryology of the Cardiovascular System

Normal development (Anatomy)

Abnormal development (Pathology)

Tuesday: Anatomy, physiology of left to right and right to left shunts

Patient presentation (Medicine/Pediatrics)

Pathologic anatomy (Pathology)

Physiology (Medicine/Pediatrics)

Treatment (Medicine/Pediatrics and Surgery)

Wednesday: Acute rheumatic fever

Pathogenesis, diagnosis (Pediatrics)

Prevention (Pediatrics)

Treatment (Medicine/Pediatrics)

Thursday: Common Valvar Lesions

Anatomy (Pathology)

Physiology (Medicine)

Friday: Bacterial Endocarditis

Acute, subacute (Medicine/Pediatrics)

Bacteriology (Microbiology)

Prevention, treatment (Pharmacology and Medicine)

To study and prepare himself in each of the topics covered and on the Cardiovascular section in general, the student would be expected to review the appropriate basic medical science subjects (in this instance anatomy and physiology) and to consult textbook and selected references for material on pathology, pathophysiology and clinical medicine. He would be expected to study slides, museum specimens and other material in pathology. Faculty instructors will be available, on schedule as needs dictate, in pathology

laboratories and clinical areas. The student will be encouraged to consult the learning center for additional material to aid him in his studies.

Basic medical science - clinical science seminar Each of the teaching sections has been assigned two hours for a seminar to highlight a problem with important basic and clinical science ramifications. An example of such a seminar in the cardiovascular section might be endocarditis. With a group of 15, a microbiologist (or pathologist) and an internist (or pediatrician) would lead the discussion (of this prepared group of students). The range of subjects might be from rheumatic to pneumococcal, basic and clinical. The objective would be to stimulate, to involve, to tie together, with no attempt to cover.

Blood I This section includes presentations on body water, electrolytes and osmotic relationships, plasma proteins, immunoglobulins and acid base balance, among others.

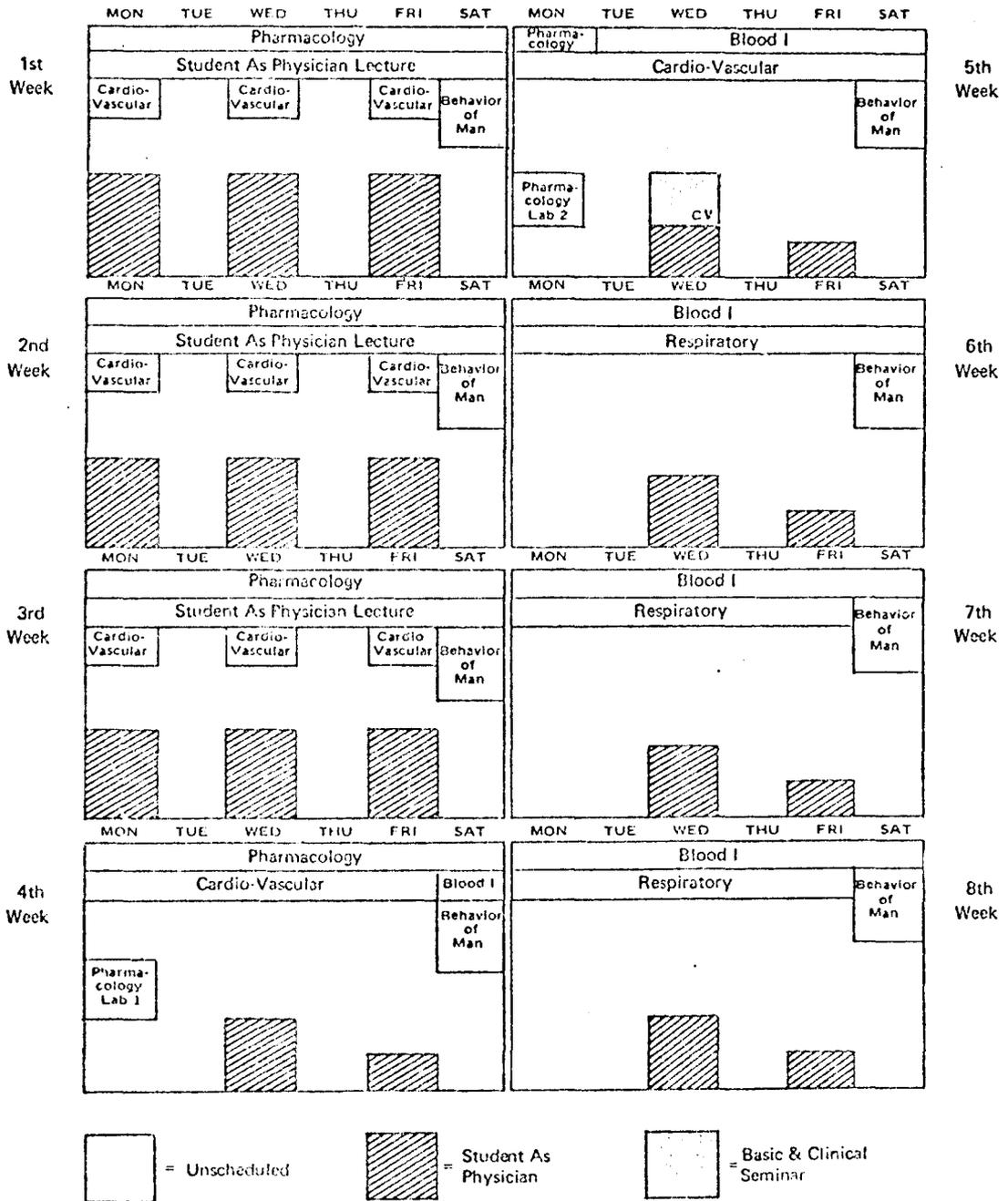
Behavior of Man Within Phase B, this will be a continuation of the blend of didactic presentations of important concepts in behavioral science and psychiatry and group discussion which would be generated from such lecture (or reading) material or from clinical experiences or problems of those in the group or from current topics of interest.

On the next page is an example of how the first 8 weeks of this quarter might be organized.

PHASE B  
(Sophomore Year)

TYPICAL 8-WEEK CLASS SCHEDULE

Showing Scheduled Periods and Unscheduled Periods



	<u>Sections</u>	<u>Approximate Hours</u>
Fall (B <sub>2</sub> )	Man in his Community	20
	Endocrine and Metabolism	45
	Reproduction including an introduction to Obstetrics	33
	Student as Physician	33
	Behavior of Man	20
	Electives	<u>22</u>
	Total - 172	

Man in his Community This section set as its goals to introduce broad concepts of health maintenance and stress the significance of these as utilized in daily patient care, to introduce broad concepts of management of illness and to enable the student to be better able to assess significance of conclusions and effectively utilize this in medical decision making. The focus of this section, then, will be the patient, at risk, and the inter-relationship between physician and his patient. The section will include an outline of the health hazard appraisal system, an introduction to biometry and statistical decision making in medicine, environmental health and epidemiology with emphasis on the individual patient, psycho-social aspects in high risk groups, and health care systems.

Electives In the B<sub>2</sub> through B<sub>5</sub> quarters, the number of class hours for electives represents a minimum for each student. Electives may be developed by interdisciplinary teaching sections, by departments and divisions or by interested interdepartmental groups. This will furnish the opportunity for those sections, departments and others whose core course is only a part of a more intensive didactic program to provide a more elaborate presentation in greater depth. Examples of electives which might be selected in this quarter: Advanced cardiovascular (or respiratory or renal) seminar, topics in electrolyte metabolism, introduction to genetics, the X-ray examination

	<u>Sections</u>	<u>Approximate Hours</u>
Winter (B <sub>3</sub> )	Gut	35
	Blood II	22
	Behavior of Man	20
	Man in His Community	22
	Student as Physician	33
	Ear-nose-throat, speech and hearing	19
	Electives	<u>22</u>
		Total - 173

Blood II This section is what has been called hematology in the past and will include material on red cells, leukocytes, lymph nodes and spleen and aspects of immunobiology.

	<u>Sections</u>	<u>Approximate Hours</u>
Spring (B <sub>4</sub> )	Neurological Sciences	86
	Student as Physician	66
	Eye	12
	Skin	17
	Electives	<u>33</u>
		Total - 214

Neurological Sciences This teaching section includes most of neuroanatomy, approximately one half of the total curriculum time allotted to neurophysiology (the other half being in core physiology in Phase A) as well as the clinical neurological sciences core material, including neurology, neurosurgery and neuropathology.

	<u>Sections</u>	<u>Approximate Hours</u>
Summer (B <sub>5</sub> )	Student as Physician	99
	Bones, Connective Tissue, Trauma	39
	Electives	<u>33</u>
		Total - 171

Breakdown by quarters	Su 233/484	= 48%
	F 172/484	= 36%
	W 173/484	= 35%
	S 214/484	= 44%
	Su 171/484	= 36%

## Phase C

The Phase C Subcommittee after due deliberation, and following consultation with the Phase D Subcommittee, evolved a two-quarter segment that would include a core, of approximately one quarter, during which the student would be introduced to the special aspects of history taking, physical diagnosis and overall introduction to surgical patients, including all of the specialties plus Obstetrics and Gynecology.

Meanwhile, proceeding independently, Phase B Subcommittee decided that clinical problem solving both for hospitalized and ambulatory patients should be an integral part of Student as Physician. This section was to place a strong emphasis on tutorial work, specifically directed reading, and scholarly analysis of the role of laboratory diagnostic procedures, including radiological approaches to biological problem solving. They anticipated that the student would have an opportunity for studying in detail approximately sixty patients on various clinical services. Indeed, they propose that this represents, essentially, core clinical introductory material. It is concluded by the Educational Policy Committee that this continuum in B will suitably replace the intent of the Phase C Subcommittee introductory quarter. Therefore, Phase C as re-constituted will be utilized for other educational purposes. In regular 3 year and 4 year programs where all five quarters of Phase B are taken without interruption, only symbols B and D will be used. In special programs, almost all of which will of necessity be the 4 year type, the symbols  $C_1$  and  $C_2$  may be used to represent quarters which are not fully elective (D) nor completely identical with a quarter in Phase B.

## Phase D

In Phase D, the student, with the help of his advisor, will embark on an elective program of study in one of six career pathways. These pathways are the following

- 1) Medicine, Pediatrics and Medical Specialties
- 2) Surgery and Surgical Specialties including Obstetrics and Gynecology
- 3) Psychiatry and Behavioral Sciences
- 4) Neurological Sciences
- 5) Family Medicine, Family Practice and Community Health
- 6) Medical Science

None of the pathways will contain mandatory requirements but each student will be urged to include at least twelve credits of basic science subjects in his program. The opportunity to return to basic science subjects after some exposure to clinical medicine is one of the attractive features of Phase D.

The length of Phase D will vary depending upon whether the student is on a three-year or a four-year plan. In the three-year plan, there will be three quarters of Phase D and either four or five quarters of D will be included in the four-year program.

A thesis on a research subject or defense of some proposition in the area of specialty will be a part of the requirement for completion of Phase D for each student.

Each pathway will be under the supervision of a review committee made up of the faculty involved in the pathway and including at least one member of a basic science faculty in each committee. The committees, which will

also have representation from the student body and from the junior faculty, will be appointed by the Educational Policy Committee and will have the responsibility of reviewing and approving each student's program on the specific pathway.

Example of a four-quarter program for a student in the Medicine, Pediatrics, and Medical Specialties track, with an interest in cardiovascular medicine is the following: sub-internship in Medicine - 12 weeks; Pharmacology and Physiology - 12 weeks; Clinical Cardiology and Electrocardiography - 12 weeks; Diagnostic Radiology (Cardiovascular) - 6 weeks; Cardiovascular and Special Pathology - 6 weeks.

An exemplary program for a student embarked upon the three-year curriculum in a Medicine, Pediatric and Medical Specialty pathway may be the following: Medical Clerkship - 6 weeks; Pediatrics Clerkship - 6 weeks; Psychiatry and Neurology Clerkship - 6 weeks; General Surgical Clerkship - 6 weeks; Biochemistry and Physiology - 12 weeks.

## PHASE D

The present senior year is a prototype of the type of courses which will be offered in Phase D. A special course list outlining the breadth of the elective courses, chosen by the student and his advisor follows:

<u>Department</u>	<u>Course Number</u>	<u>Course Title</u>	<u>Minimum Block Time Weeks</u>
ANATOMY	Anat. 5-190	Advanced Anatomy	12
ANESTHESIOLOGY	Anes. 5-169	Research	6
	Anes. 5-181	Externship in Clinical Practice of Anesthesiology	3
	Anes. 5-182	Externship in Anesthesiology & Respiratory Problems (prereq. 5-181)	3
BIOCHEMISTRY	MdBc 8-200	Seminar	--
	MdBc 8-300	Research	12
	MdBc 8-206	Endocrinology and Steroid Chemistry	--
	MdBc 8-210	Metabolic Enzymology	--
	MdBc 8-211	Nucleic Acid Structure & Function	--
DERMATOLOGY	Derm. 5-182	Clinical Problems in Derm.	3
	Derm. 5-183	Advanced Course in Derm.	3
FAMILY PRACTICE & COMMUNITY HEALTH	FPCH 5-500	Externship in Clinical Practice	6
HISTORY OF MEDICINE	HMed. 5-400	History of Medicine	--
	HMed. 5-401	History of Medicine	--
	HMed. 5-402	History of Medicine	--
	HMed. 5-410	Seminar	--

<u>Department</u>	<u>Course Number</u>	<u>Course Title</u>	<u>Minimum Block Time Weeks</u>
HISTORY OF MEDICINE (Con't.)	HMed. 5-411	Seminar	--
	HMed. 5-412	Seminar	--
LABORATORY MEDICINE	LMed 5-181	Laboratory and Clinical Hematology	6
	LMed 5-182	Medical Genetics	6
	LMed 5-183	Clinical and Laboratory Immunology	6
	LMed 5-184	Immunoematology in Blood Banking	3
	LMed 5-185	Laboratory Problems in Blood Coagulation	3
	LMed 5-186	Clinical Pathology Externship - HCGH	6
	LMed 5-187	Clinical Pathology Externship - Mt. Sinai	6
	LMed 5-188	Clinical Pathology Externship - Methodist Hospital	6
	LMed 5-189	Clinical Blood Bank Immunology	6
	LMed 5-190	Computer Applications in Laboratory Medicine	3
	LMed 5-191	General Clinical Microbiology	3 or 6
	LMed 5-192	Antibiotic Teaching Unit	3
	LMed 5-193	Clinical Pathology Externship at Hibbing General Hospital	3
	LMed 5-765	Hematology - blood and blood forming organs (Lecture series)	--
	LMed 5-766	Hematology - blood and bone marrow diagnosis (lecture series, pre req. LMed 5-765)	--
	MEDICINE	Med 5-501	Medical Oncology Externship in Medicine at Univ. Hosp.
Med 5-502		Medical Externship at V.A. Hospital	6

<u>Department</u>	<u>Course Number</u>	<u>Course Title</u>	<u>Minimum Block Time Weeks</u>
MEDICINE (con't.)	Med. 5-503	Medical Externship at St. Paul Ramsey	6
	Med. 5-504	Medical Externship at Northwestern	6
	Med. 5-505	Medicine Externship at Mt. Sinai	6
	Med. 5-511	Research in Gastroenterology at University Hospital	Arr.
	Med. 5-512	Research Topics in Hematology at University Hospital	12
	Med. 5-521	Problems in Clinical Medicine at University Hospital	--
	Med. 5-522	Gastroenterology at University Hospital	6
	Med. 5-523	Metabolism and Clinical Pharmacology at Univ. Hosp.	6
	Med. 5-524	Immunology, Allergy, and Infectious Disease at University Hospital	6
	Med. 5-525	Cardiovascular Disease at University Hospital	6
	Med. 5-526	Electrocardiography at University Hospital	3
	Med. 5-527	Renal at University Hospital	3
	Med. 5-528	Clinical Hematology at University Hospital	6
	Med. 5-529	Clinical Hematology (Abbreviated) at University Hospital	3
	Med. 5-530	Seminar in Oncology at University Hospital	--
	Med. 5-541	Trends, Methodology, and Techniques in the Delivery of Medical Service at St. Paul Ramsey Hospital	--
	Med. 5-542	Hematology at St. Paul-Ramsey Hospital	6

<u>Department</u>	<u>Course Number</u>	<u>Course Title</u>	<u>Minimum Block Time Weeks</u>
MEDICINE (con't.)	Med. 5-543	Cardiology at St. Paul-Ramsey Hospital	6
	Med. 5-544	Pulmonary Disease at St. Paul-Ramsey Hospital	6
	Med. 5-551	Cardiology (EKG) at V.A. Hospital	6
	Med. 5-552	Clinical Hematology at V.A. Hospital	6
	Med. 5-553	Pulmonary Disease at V.A. Hospital	6
	Med. 5-554	Fluid, Electrolyte and Acid-Base Metabolism at V.A. Hospital	6
	Med. 5-555	Electrocardiography - V.A.H.	6
	Med. 5-561	Cardiology Service at Hennepin County General Hospital	6
	Med. 5-562	Renology Service at Hennepin County General Hospital	6
	Med. 5-563	Pulmonary Disease at Hennepin County General Hospital	6
	Med. 5-571	Medical Emergency Room at St. Paul-Ramsey Hospital	6
	Med. 5-572	Ambulatory Medicine at St. Paul-Ramsey Hospital	6
	Med. 5-573	Medical Out-Patient Clinics at Hennepin County General Hospital	6
MICROBIOLOGY	MicB 5-116	Immunology	--
	MicB 5-117	Immunology Laboratory	--
	MicB 5-121	Physiology of Bacteria	--
	MicB 5-124	Biology of Viruses	--
	MicB 5-152	Special Problems	6
	MicB 8-202	Diagnostic Microbiology	--
	MicB 8-223	Bacterial Metabolism	--

Minimum  
Block  
Time  
Weeks

<u>Department</u>	<u>Course Number</u>	<u>Course Title</u>		
NEUROLOGY	Neur. 5-510	Externship in Clinical Practice - U. Hospital	6	
	Neur. 5-511	Externship in Clinical Practice - SPR Hospital	6	
	Neur. 5-512	Externship in Clinical Practice HCG Hospital	6	
	Neur. 5-513	Externship in Clinical Practice - VA Hospital	6	
	Neur. 5-120	Selected Problems in Neurology	6	
	Neur. 5-540	Neurochemistry (U. Hosp.)	6	
	Neur. 5-541	Neurochemistry-Pediatrics Neurology (U. Hospital)	12	
	Neur. 5-544	Clinical Electroencephalography (U. Hospital)	6	
	Neur. 5-545	Electromyography (U. Hosp.)	6	
	Neur. 5-550	Neuropathology	3	
	Neur. 5-555	Clinical Neurophysiology (SPR Hospital)	12	
	Neur. 5-560	Genetics (V.A. Hospital)	6	
	NEUROSURGERY	NSur. 5-500	Externship at Univ. Hosp.	3
		NSur. 5-510	Externship at V.A. Hospital	3
NSur. 5-511		Externship at Hennepin County General	3	
NSur. 5-520		Neurosurgery Investigation	6	
OBSTETRICS - GYNECOLOGY	Obst. 5-500	Externship in Obstetrics	6	
	Obst. 5-505	Externship in Gynecology	6	
	Obst. 5-510	Externship in Obstetrics & Gynecology	6	
	Obst. 5-515	Obstetrics and Gynecology Externship in Clinical Pract.	3	

<u>Department</u>	<u>Course Number</u>	<u>Course Title</u>	<u>Minimum Block Time Weeks</u>
OB. & GYN. (Cont.)	Obst. 5-520	Problems in Obstetrics & Gynecology	3
	Obst. 5-540	Psychiatric Aspects of Obstetrics & Gynecology	6
	Obst. 5-560	Research in Reproduction	12
OPHTHALMOLOGY	Opth. 5-180	Externship in Ophthalmology	3
	Opth. 5-190	Ophthalmology Research Problems	12
ORTHOPEDIC SURGERY	OrSu. 5-185	Externship in Orthopedic Surgery	6
	OrSu. 5-187	Externship in Orthopedic Surgery	6
	OrSu. 5-188	Externship in Orthopedic Surgery	6
	OrSu. 5-189	Externship in Orthopedic Surgery	6
	OrSu. 5-186	Research Problems in Orthopedic Surgery	12
OTOLARYNGOLOGY	Otol 5-191	Externship in Otolaryngology	3
	Otol 5-194	Research in Otolaryngology	12
PATHOLOGY	Path 5-105	Diseases of the Kidney	--
	Path 5-106	Diseases of the Heart	--
	Path 5-112	Diagnosis of Tumors	--
	Path 5-113	Surgical Pathology	3
	Path 5-114	Surgical Pathology	3
	Path 5-115	Surgical Pathology	3
	Path 5-122	Basic Science of Cancer	--
	Path 5-150	Problems in Pathology	6
	Path 5-151	Problems in Pathology HCGH	6
Path 5-152	Problems in Pathology VA	6	
	Path 5-161	Forensic Pathology	--

<u>Department</u>	<u>Course Number</u>	<u>Course Title</u>	<u>Minimum Block Time Weeks</u>
PEDIATRICS	Peds. 5-501	Inpatient Externship at Hennepin County General Hospital	6
	Peds. 5-502	Inpatient and Outpatient Externship at Children's Hospital	12, 6 Arr.
	Peds. 5-503	Inpatient Externship at St. Paul-Ramsey	6
	Peds. 5-511	Outpatient Externship at University Hospital	6
	Peds. 5-512	Outpatient Externship at Hennepin County General Hosp.	6
	Peds. 5-513	Clinical Experience at Community-University Health Care Center	12
	Peds. 5-514	Community Pediatrics at Pilot City Health Center	6
	Peds. 5-515	Outpatient Health Care at St. Paul-Ramsey Hospital	6
	Peds. 5-516	Clinical Pediatrics at the Mayo Clinic	6
	Peds. 5-531	Neo-Infant Program	16
	Peds. 5-532	Clinical Immunology at University Hospital	6
	Peds. 5-533	Pediatrics Cardiology at the Mayo Clinic	6
	Peds. 5-534	Pediatrics Cardiology at the University Hospital	6
	Peds. 5-535	Infectious Disease	6
	Peds. 5-536	Pediatric Hematology-Oncology at University Hospital	6
	Peds. 5-537	Pediatrics Endocrinology and Metabolism at Univ. Hosp.	6
	Peds. 5-538	Endocrinology and Metabolism	30
	Peds. 5-539	Introduction to Neonatology	6
	Peds. 5-540	Pediatric Neurology at University Hospital	6

<u>Department</u>	<u>Course Number</u>	<u>Course Title</u>	<u>Minimum Block Time Weeks</u>	
PEDIATRICS (Con't.)	Peds. 5-541	Pediatric Neurology at the Mayo Clinic	6	
	Peds. 5-542	Clinical Pharmacology	12	
	Peds. 5-543	Nephrology at the Univ. Hosp.	6	
	Peds. 5-544	Pediatric Pulmonary Disease	6	
	Peds. 5-545	Child Psychiatry at the Mayo Clinic	12	
	Peds. 5-571	Research at Community University Health Care Center	12	
	Peds. 5-572	The Prenatal Interview as a Predictor of Health Risk areas for the Child	12	
	Peds. 5-573	Research in Immunocytology	12	
	PHARMACOLOGY	Phcl. 5-105	Forensic Medicine and Medical Jurisprudence	--
		Phcl. 5-106	Toxicology	--
Phcl. 8-201		Advanced Pharmacology: Physiological Disposition of Drugs	--	
Phcl. 8-202		Advanced Pharmacology: Pharmacodynamics	--	
Phcl. 8-203		Research in Pharmacology	12	
Phcl. 8-204		Seminar: Selected Topics in Pharmacology	--	
Phcl. 8-206		Seminar: Psychopharmacology	--	
Phcl. 5-501		Clinical Pharmacology	--	
Phcl. 5-502		Clinical Pharmacology	Arr.	
PHYSICAL MEDICINE & REHABILITATION		PMed. 5-410	Adult Rehabilitation Medicine	6
	PMed. 5-411	Pediatric Rehabilitation Medicine	6	
	PMed. 5-412	Arthritis Rehabilitation	3	
	PMed. 5-413	Amputation Rehabilitation	3	

<u>Department</u>	<u>Course Number</u>	<u>Course Title</u>	<u>Minimum Block Time Weeks</u>
PHYS. MED. & REHAB. (Con't)	PMed. 5-414	Physical Medicine and Rehab. for the Family Physician	3
	PMed. 5-415	Psychological Aspects of Chronic Disease	--
	PMed. 5-420	Histopathology, Electordiagnosis, and Kinesiology	3
	PMed. 5-430	Research in Physical Medicine and Rehabilitation	12
PHYSIOLOGY	Phs1 5-113	Problems in Physiology	--
	Phs1 8-201	Literature Seminar	--
	Phs1 8-202	Readings in Physiology	--
	Phs1 8-203	Research in Physiology	--
	Phs1 8-210	Selected Topics in Permeability	--
	Phs1 8-213	Selected Topics in Alimentary Physiology	--
	Phs1 8-216	Selected Topics in Neurophysiology	--
	Phs1 8-220	Methods of Analysis	--
	Phs1 8-227	Methods in Physiology	--
	Phs1 8-236	Hemodynamic Measurements	--
	Phs1 8-239	Topics in Microcirculation and Lymphatics	--
PSYCHIATRY	PtrA 5-500	Externship in Adult Psychiatry at HCGH	6
	PtrA 5-501	Externship in Adult Psychiatry at St. Paul Ramsey	6
	PtrA 5-502	Externship in Adult Psychiatry at V.A. Hospital	6
	PtrA 5-503	Externship in Adult Psychiatry at Fairview and St. Mary's	6

<u>Department</u>	<u>Course Number</u>	<u>Course Title</u>	<u>Minimum Block Time Weeks</u>
PSYCHIATRY (Con't.)	PtrA 5-510	Clinical Problems in Psychiatry	12
	PtrA 5-520	Psychological Problems in Medical Practice	6
DIVISION OF CHILD PSYCHIATRY	PtrC 5-500	Externship and Clinical Practice, Child Psychiatry	6
	PtrC 5-520	Externship in Child Psychiatry	--
PUBLIC HEALTH	PubH 5-104	Epidemiology I	--
	PubH 5-105	Epidemiology II	--
	PubH 5-106	Public Health Administration	--
	PubH 5-107	Maternal and Child Health	--
	PubH 5-120	Biomedical Computing	--
	PubH 5-123	Topics in Public Health	--
	PubH 5-124	Medical Statistics II	--
	PubH 5-129	Epidemiologic Survery Methods	--
	PubH 5-134	Human Genetics and Public Health	--
	PubH 5-136	Handicapped Children	--
	PubH 5-141	Social and Economic Aspects of Medical Care	--
	PubH 5-143	Measurement and Application of Ionizing Radiation	--
	PubH 5-147	Environmental Radioactivity	--
	PubH 5-151	Health Aspects of Air Control in Hospitals	--
	PubH 5-153	Principles and Methods of Accident Prevention	--
PubH 5-155	Introduction to the Air Pollution Problem	--	
PubH 5-157	Radiation Protection Criteria for Hospitals	--	

<u>Department</u>	<u>Course Number</u>	<u>Course Title</u>	<u>Minimum Block Time Weeks</u>
PUBLIC HEALTH (cont.)	PubH 5-158	Hospital Safety	--
	PubH 5-188	Comparative Medicine and Public Health	--
	PubH 5-191	Applied Human Nutrition	--
	PubH 5-195	Public Health Aspects of Cardiovascular Disease	--
	PUBH 8-200	Research	6
	PubH 8-214	Health of the School Age Child	--
	PubH 8-238	Radiation Dosimetry	--
	PubH 8-239	Radiation Dosimetry Laboratory	--
	PubH 8-241	Epidemiology of Noncommunicable Diseases	--
	RADIOLOGY	Rad. 5-500	Externship in Radiology
Rad. 5-501		Externship in Radiology	3
Rad. 5-505		Externship in Radiation Therapy	3
Rad. 5-510		Externship in Diagnostic Radiology at University Hospital	3
Rad. 5-511		Externship in Diagnostic Radiology at H.C.G.H.	3
Rad. 5-512		Externship in Diagnostic Radiology at Veterans Hospital	3
Rad. 5-530		Problems in Radiation Biology and Radioactive Isotope Methods	3
SURGERY		Surg. 5-500	Externship in Surgery at University - 6 Transplantation and General Surgery
	Surg. 5-501	Externship in Surgery at University 6 Cardiovascular and Thoracic Problems	6
	Surg. 5-502	Externship in Surgery at University	6
	Surg. 5-503	Externship in Surgery at University - Pediatrics Surgery	6
	Surg. 5-504	Externship in Surgery at University - 6 General Surgical Problems including some Thoracic and Cardiovascular Cases	6

<u>Department</u>	<u>Course Number</u>	<u>Course Title</u>	<u>Minimum Block Time Weeks</u>
SURGERY (Cont.)	Surg. 5-510	Externship in Surgery at V. A. Hospital	6
	Surg. 5-511	Externship in Surgery at St. Paul-Ramsey	6
	Surg. 5-512	Externship in Surgery at Hennepin County General	6
	Surg. 5-513	Externship in Surgery at Mt. Sinai Hospital	6
	Surg. 5-520	Experimental Surgery	6
DIVISION OF UROLOGY	Urol. 5-180	Externship in Urology	3

FAMILY PRACTICE AND COMMUNITY HEALTH

A new concept of a Family Practice and Community Health Program has been included into the new curriculum. The following outlines the objectives and plans of the Department of Family Practice and Community Health.

The Department of Family Practice and Community Health at the University of Minnesota Medical School was in its planning phase from April, 1967 through October, 1967. During that time, the decision to train an entirely new kind of physician was made, and the body of knowledge felt to be essential for this physician was developed. This is as outlined in the Report of the Subcommittee on Family Practice and Community Health of the University of Minnesota Medical School dated October, 1967. Subsequent to that time, the staff of the department has been concerned with the development of a teaching program incorporating these principles. The initial faculty of the department will consist of a nuclear staff composed of representatives of those other specialty areas in medical practice from which relevant portions of the body of knowledge of family medicine will be taken (pediatrics, internal medicine, psychiatry, obstetrics and certain of the behavioral sciences). The second increment of faculty will consist of men who have had experience in general practice who will return to the department for a period of training in family medicine. An attempt will be made to integrate those portions of the body of knowledge of family medicine from all of the other specialties in such a way that each of these men will be able to teach the new discipline to subsequent trainees. These men will comprise the subsequent faculty of the department. It is our initial plan to train about fifteen such physicians for our faculty.

During the developmental phase of this department, we have also been attending to the selection of a patient population. The criteria for our selection will be that it represent a reasonable cross section of society, both from a socio-economic viewpoint and also from an age viewpoint. We are developing a prepaid insurance plan for this patient population.

The department is developing as a free-standing department within the Medical School. It will see its patients in an ambulatory care area within the University Hospitals and when patients need hospital admission, they will be admitted on the hospital service of the Department of Family Practice and Community Health. The responsibility for inpatient care will remain with the same resident who has outpatient responsibilities for that patient.

We are also in the process of developing affiliated units, both in the metropolitan area of the Twin Cities and in rural portions of the state. As we develop our faculty, some of them will be given the responsibility of development of these affiliated units.

Our educational program will involve the undergraduate medical student at all stages of his training in addition to the above-described resident training program. This will be effected through the mechanism of giving the trainee progressively increasing increments of responsibility in direct patient care. There will also be made available to him opportunities for interaction with the faculty through the mechanism of conferences, seminars, etc. Certain didactic course work will be available to him within the entire University Program.

Since one of our goals is to train physicians to be more effective in delivery of total health care, every effort will be made to apprise the trainee of the

multiple resources available to him in his practice and to make him knowledgeable of their proper application. Because we regard this as an important goal, we plan to have many of these resources available to the trainee when he is engaging in direct patient care.

Our research program will develop in areas of health care maintenance, education, natural history of disease, etc.

Dictated by B. F. Fuller, M.D., Professor and Chairman, Department of Family Practice and Community Health.

#### CURRICULUM EVALUATION

The Educational Policy Committee and its several, established review sub-committees provide ongoing study of the curriculum. Members of the Medical School student body serve on these committees.

The students of the Medical School have played a significant role in the establishment of the new Medical School curriculum. In addition, the students provide continual critiques of departmental curricula and the individual courses.

DEPARTMENTAL TEACHING PROGRAMS

1968-69

The following tabulations include Medical School department descriptions and current course offerings; including both undergraduate and graduate disciplines.

Department of Anatomy: The courses in the department provide an opportunity for examining the structure of the human body. In gross anatomy, three-dimensional architecture and relationships to other organs are studied by dissection. In microscopic anatomy, the organization of cells, tissues, and organs is assessed from stained sections using light microscopy and electron micrographs. For each system, in embryology, the normal development and anomalies are presented using preserved specimens and models. Special emphasis is given to neurocytology and neurochemistry in neuroanatomy. Where appropriate, the courses are correlated with the various clinical disciplines. Thus the student may enhance his powers of observation, his ability to communicate using specific terminology, and his synthesis of morphology with biochemistry and physiology. More depth in any of the subjects can be obtained through advanced course work on elective time.

Undergraduate Courses:

Medical:

Gross Human Anatomy (101f-101w)  
Human Histology (103f-104s)  
Human Embryology (107w)  
Neuroanatomy (111s)  
Advanced Anatomy (190) - Elective

Dental:

Microscopic (105)  
Gross Anatomy (108-109)  
Neuroanatomy (110)

Others:

Elementary Anatomy (Anat 3)  
Elementary Anatomy (Anat 4)  
Anatomy for Physical Education (Anat 27)  
Anatomy for Mortuary Science (Anat 52)  
Anatomy for Physical Therapy & Occupational Therapy (Anat 58)  
Anatomy for Medical Technologists (Anat 165)  
Anatomy for Medical Technologists (Anat 166)

Department of Anatomy - Continued

Graduate Courses:

- Advanced Anatomy
- Special Research in Anatomy
- Electron Microscopy
- Anatomy Seminar
- Gross Anatomy (100-101)
- Human Histology (103-104)
- Embryology (107)
- Medical Neuroanatomy (111)

Department of Biochemistry: Biochemistry occupies a central position in all medical science and in clinical medicine. The required course first deals with general biochemistry and treats the chemical transformations fundamental to life processes occurring at the cellular and subcellular levels. A major emphasis is on the integration of biochemical processes and on the regulation and coordination of the metabolic reactions. Biochemical abnormalities in disease are employed to fortify the understanding of the normal processes and to indicate the application of biochemical principles to future studies of disease processes.

Undergraduate Courses:

Medical:

- Biochemistry (100-101w)
- Seminar (MdBc 8-200) - Elective
- Research (MdBc 8-300) - Elective
- Endocrinology and Steroid Chemistry (MdBc 8-206) - Elective
- Metabolic Enzymology (MdBc 8-210) - Elective
- Nucleic Acid Structure & Function (MdBc 8-211) - Elective

Dental:

- Biochemistry (104f)
- Biochemistry (105w)

Others:

- Metabolic Enzymology (210w)
- Topics in Lipid Chemistry (215su)
- Protein Chemistry (217w)
- Biochemistry of Specialized Tissues (219f)
- Biochemistry (30f)
- Biochemistry (50f)
- Biochemistry (106f)
- Biochemistry (107w)

Department of Biochemistry - Continued

Graduate Courses:

Problems in Biochemistry (153 f,w,s,su)  
Laboratory Work in Isolation & Characterization of Natural Products &  
in Metabolic Processes (147s)  
Advanced Endocrinology & Steroid Chemistry (206f)  
Nucleic Acid Structure & Function (211s)  
Radioisotope Seminar (236 f,w,s)  
Tutorial & Problems (153 f,w,s)  
Biochemistry (141f, 142w, 143s)  
Laboratory for Graduate Students (147s)  
Endocrinology (206f)  
Enzymology (210w)  
Nucleic Acids (211s)  
Lipid Metabolism (215su)  
Protein Chemistry (217w)  
Research (205 f,w,s,su)  
Seminar (200 f,w,s)  
Biochemistry (100su, & 101 su)  
Biochemistry Specialized Tissues (219f)  
Biochemistry (102f)  
Biochemistry (103w)

Department of Microbiology: Microbiology for medical students educates the future practicing physician in the principles and techniques which help to understand host-parasite relationships and pathogenesis in infectious diseases. The application of modern microbiology to medical diagnosis guides the future physician in the treatment and prevention of infectious diseases and in the use of chemotherapeutic and antibiotic agents.

In the lecture portion of the course, experts in each area review current research and basic principles in medical bacteriology, immunology, mycology, and virology. Through intensive laboratory experience the future clinician is trained to interpret laboratory results as well as to appreciate his role in, and the need for, cooperation between the modern physician and the diagnostic laboratory.

Undergraduate Courses:

Medical:

Microbiology for Medical Students (205 & 206)  
Immunology (MicB 5-116) - Elective  
Immunology Laboratory (MicB 5-117) - Elective

Department of Microbiology - Continued

Undergraduate Courses:

Medical: (Contd.)

Physiology of Bacteria (MicB 5-121) - Elective  
Biology of Viruses (MicB 5-124) - Elective  
Special Problems (MicB 5-152) - Elective  
Diagnostic Microbiology (MicB 8-202) - Elective  
Bacterial Metabolism (MicB 8-223) - Elective

Dental:

Microbiology for Dental Students (5-201)

Others:

Elementary Microbiology (1-101)  
General Microbiology (3-103)  
Medical Microbiology (5-232)  
Clinical Microbiology (5-233)  
Special Problems (5-970)  
Biology of Microorganisms (5-105)

Graduate Courses:

Ecology of Soil Microorganisms (5-612)  
Microbial Genetics (5-311)  
Advanced Microbiology (5-611)  
General Mycology (5-512)  
Immunology (5-216) and Immunology Laboratory (5-217)  
Physiology of Bacteria (5-321)  
Biology of Viruses (5-424)  
Research in Microbiology (8-990)  
Diagnostic Microbiology (8-242)  
Seminar (8-910)  
Advances in Immunology (8-920)  
Laboratory Methods (8-425)  
Advanced Medical Microbiology (8-234)  
Physiology of Bacteria Laboratory (8-322)  
Bacterial Metabolism (8-332)  
Immunobiology & Immunochemistry (8-218)

Department of Pathology: The morphologic changes in organs and tissues which occur in disease are the subject of the courses in Pathology. In lectures, demonstrations, and laboratory study the student is presented the basic reactions of the body to various kinds of injury and also the special types of reactions of various organs and organ systems to specific types of injurious agents. Opportunities are offered to those students who wish to continue their study of pathology beyond the regular courses either by taking elective courses or by engaging in research projects.

Department of Pathology - Continued

Undergraduate Courses:

Medical:

General Pathology (Path 101)  
Special Pathology (Path 102)  
Diseases of the Kidney (Path 5-105) - Elective  
Diseases of the Heart (Path 5-106) - Elective  
Diagnosis of Tumors (Path 5-112) - Elective  
Surgical Pathology (Path 5-113) - Elective  
Surgical Pathology (Path 5-114) - Elective  
Surgical Pathology (Path 5-115) - Elective  
Basic Science of Cancer (Path 5-122) - Elective  
Problems in Pathology (Path 5-150) - Elective  
Problems in Pathology Hennepin County General Hospital (Path 5-151) - Elective  
Problems in Pathology Veterans Administration Hospital (Path 5-152) - Elective  
Forensic Pathology (Path 5-161) - Elective

Dental:

Pathology for Dental Students (Path 100)

Others:

Pathology for Mortuary Science Students (Path 53)  
Pathology for Mortuary Science Students (Path 54)  
Pathology for Physical Therapists (Path 60)

Graduate Courses:

Autopsies (Path 104)  
Seminar (Path 110)  
Conference on Autopsies (Path 111)  
Seminar: Experimental Pathology (Path 140)  
Problems in Experimental Pathology (Path 141)  
Research (Path 201)

Department of Pharmacology: The purpose of the medical courses in pharmacology is to provide students with a fundamental understanding, in depth, of underlying principles upon which rational therapy is based. Emphasis is placed on mechanism of action, absorption, distribution, biotransformation, and excretion of drugs both in general and in specific terms. Laboratories and therapeutic conferences are included as adjuncts to lectures so that actions of drugs in health and disease can be illustrated. During the clinical experiences, clinical pharmacologists attempt to show by means of ward rounds and clinical conferences how principles of pharmacology are applied for treatment of disease in patients.

Department of Pharmacology - Continued

Undergraduate Courses:

Medical:

General Pharmacology (103, 104)  
Forensic Medicine, Medical Jurisprudence (105) - Elective  
Problems (109)  
Advanced Pharmacology: Pharmacodynamics (202) - Elective  
Clinical Pharmacology: Lectures on General Principles (207)  
Clinical Pharmacology: Participation in Clinical and Laboratory Studies (208)  
Toxicology (Phcl. 5-106) - Elective  
Advanced Pharmacology: Physiological Disposition of Drugs (Phcl. 8-201) - Elective  
Research in Pharmacology (Phcl. 8-203) - Elective  
Seminar: Selected Topics in Pharmacology (Phcl. 8-204) - Elective  
Seminar: Psychopharmacology (Phcl. 8-206) - Elective  
Clinical Pharmacology (Phcl. 5-501) - Elective  
Clinical Pharmacology (Phcl. 5-502) - Elective

Dental:

Dental Therapeutics (108)  
General Pharmacology (102)  
Dental Therapeutics (1)

Others:

Pharmacology for Nursing Students (9)  
General Pharmacology (102)  
Toxicology (106)  
Biological Assay of Drugs (162)

Graduate Courses:

General Pharmacology (103, 104)  
Toxicology (106)  
Pharmacometrics (107)  
Problems (109)  
Advanced Pharmacology: Physiological Disposition of Drugs (201)  
Advanced Pharmacology: Pharmacodynamics (202)  
Research in Pharmacology (203)  
Seminar: Selected Topics in Pharmacology (204)  
Seminar: Survey of Current Pharmacological Literature (205)  
Seminar: Psychopharmacology (206)  
Clinical Pharmacology: Lectures on General Principles (207)

Department of Physiology: Provides courses in human physiology; hemodynamic measurements; history of physiology; topics of permeability, heart and circulation, respiration, neurophysiology, microcirculation; methods of analysis; transport processes; respiration, acid base and electrolyte physiology; bioenergetics of cardiac contraction, renal hemodynamics; biophysics of nerve function; neural and humoral control of circulation.

Department of Physiology - Continued

Undergraduate Courses:

Medical:

Human Physiology (106-107)  
Hemodynamic Measurements (Phs1 112) - Elective  
Problems in Physiology (Phs1 113) - Elective  
Readings in Physiology (Phs1 202) - Elective  
History of Physiology (Phs1 204)  
Selected Topics in Permeability (Phs1 210) - Elective  
Selected Topics in Heart and Circulation (Phs1 211)  
Selected Topics in Respiration (Phs1 212)  
Selected Topics in Neurophysiology (Phs1 216) - Elective  
Topics in Microcirculation and Lymphatics (Phs1 219) - Elective  
Methods of Analysis (Phs1 220) - Elective  
Methods in Physiology (Phs1 227) - Elective  
Transport Process in Biology (Phs1 230-231)  
Respiration, Acid Base Chemical and Electrolyte Metabolism (Phs1 234)  
Bioenergetics of Cardiac Contraction (Phs1 235)  
Renal Hemodynamics (Phs1 236)  
Biophysical Aspects of Nerve Function (Phs1 237)  
Neural and Humoral Control of Circulation (Phs1 238)  
Literature Seminar (Phs1 8-201) - Elective  
Research in Physiology (Phs1 8-203) - Elective  
Selected Topics in Alimentary Physiology (Phs1 8-213) - Elective

Dental:

Human Physiology (Phs1 2)  
Human Physiology (Phs1 101)

Others:

Human Physiology (Phs1 2)  
Human Physiology (Phs1 51)  
Principles of Physiology (Phs1 52-53)  
Principles of Physiology (Phs1 55-56)  
Human Physiology (Phs1 70)  
Readings in Physiology (91H)  
Problems in Physiology (92H)  
Physics for Biologists (Phs1 110-111)

Graduate Courses:

Human Physiology (Phs1 106-107)  
Physics for Biologists (Phs1 110-111)  
Hemodynamic Measurements (Phs1 112)  
Problems in Physiology (Phs1 113)  
Literature Seminar (Phs1 201)  
Readings in Physiology (Phs1 202)  
Research in Physiology (Phs1 203)  
History of Physiology (Phs1 204)  
Selected Topics in Permeability (Phs1 210)  
Selected Topics in Heart and Circulation (Phs1 211)

Department of Physiology - Continued

Graduate Courses Continued:

Selected Topics in Respiration (Phs1 212)  
Selected Topics in Neurophysiology (Phs1 216)  
Topics in Microcirculation and Lymphatics (Phs1 219)  
Methods of Analysis (Phs1 220)  
Methods in Physiology (Phs1 227)  
Transport Process in Biology (Phs1 230-231)  
Respiration, Acid Base Chemical and Electrolyte Metabolism (Phs1 234)  
Bioenergetics of Cardiac Contraction (Phs1 235)  
Renal Hemodynamics (Phs1 236)  
Biophysical Aspects of Nerve Function (Phs1 237)  
Neural and Humoral Control of Circulation (Phs1 238)

Department of Anesthesiology: Every physician should be prepared to resuscitate his patients in respiratory or circulatory distress, as well as initiate therapy of comatose or respiratory crippled patients. The best method of learning these arts is to be responsible for anesthetic management of surgical patients. Furthermore, over half the graduates of this school enter a surgically oriented practice, either as general practitioners or specialists, and they will usually be responsible for directing nurse anesthetists. They, as well as those who refer patients for surgery, should understand fundamental principles of anesthetic care, drugs, and complications.

Undergraduate Courses:

Medical:

General Anesthesia  
Regional Anesthesia  
Pre & Postanesthetic Evaluation  
Seminar  
Research (5-169) - Elective  
Externship in Clinical Practice of Anesthesiology (5-181) - Elective  
Externship in Anesthesiology & Respiratory Problems (prereq. 5-181 & 5-182) - Elective

Graduate Courses:

General Anesthesia  
Regional Anesthesia  
Pre & Postanesthetic Evaluation  
Seminar  
Research

Department of Laboratory Medicine: The courses, although primarily required to direct the students' attention to accessory diagnostic procedures, aims also to complement the course in medicine and serve as an introduction to clinical medicine. The student is required to consider the patterns of disease and to recognize those aberrations of disease which may be detected by means of laboratory procedures. The courses consist of lectures, small group sessions, TV demonstrations, and laboratory instruction. The small group meetings provide for personal contact discussion, demonstrations, and active participation. The laboratory work includes the simpler but important laboratory tests, performed by the student during his clinical clerkship, which are part of the skills of the physician.

Undergraduate Courses:

Medical:

Immunology Seminar (193)  
Basic Electronics of Laboratory Instruments (100)  
Human Biochemical Genetics (162)  
Human Biochemical Genetics Laboratory (163)  
Hematology (165, 166)  
Seminar: Hematology (167)  
Human Genetic Traits Including Blood Groups (172)  
Analytical Techniques in Laboratory Medicine (173, 174)  
Interpretation of Laboratory Data (175, 176)  
Principles in Electron Microscopy (146)  
Electron Microscopy Techniques (147)  
Ultrastructural Changes in Pathology (148)  
Introduction to Clinical Chemistry (150)  
Human Cytogenetics (160)  
Human Cytogenetics Laboratory (161)  
Laboratory and Clinical Hematology (LMed 5-181) - Elective  
Medical Genetics (LMed 5-182) - Elective  
Clinical and Laboratory Immunology (LMed 5-183) - Elective  
Immunohematology in Blood Banking (LMed 5-184) - Elective  
Laboratory Problems in Blood Coagulation (LMed 5-185) - Elective  
Clinical Pathology Externship - HCGH (LMed 5-186) - Elective  
Clinical Pathology Externship - Mt. Sinai (LMed 5-187) - Elective  
Clinical Pathology Externship - Methodist Hospital (LMed 5-188) - Elective  
Clinical Blood Bank Immunology (LMed 5-189) - Elective  
General Clinical Microbiology (LMed 5-191) - Elective  
Antibiotic Teaching Unit (LMed 5-192) - Elective  
Research Seminar (190)  
Departmental Seminar (191)

Department of Laboratory Medicine - continued

Undergraduate Courses:

Medical:

- Computer Application in Laboratory Medicine (LMed 5-190) - Elective
- Clinical Pathology Externship at Hibbing General Hospital (LMed 5-193) -  
Elective
- Hematology - blood and blood forming organs(Lecture series)(LMed 5-765) -  
Elective
- Hematology - blood and bone marrow diagnosis (Lecture series,pre req.)  
(LMed 5-766) - Elective

Others:

- Orientation in Medical Technology (10)
- Case Presentations (30-31-32)
- Clinical Chemistry (70)
- Electrocardiography & Basal Metabolism Testing (73)
- Clinical Hematology (75)
- Clinical Microbiology (80A)
- Special Clinical Microbiology (80B)
- Clinical Immunology (83)
- Histologic Techniques (85)
- Advanced Clinical Practice (93)
- Honors Course in Advanced Clinical Practice (93H)
- Basic Electronics of Laboratory Instruments (100)
- Introduction to Clinical Chemistry (62)
- Introduction to Urinalysis (63)
- Clinical Hematology: Methodology (65)
- Introduction to Clinical Immunohematology (66)
- Diagnostic Microbiology (68)
- Clinical Chemistry (72)
- Applied Clinical Chemistry (82)
- Applied Clinical Hematology and Immunohematology (86)
- Applied Diagnostic Microbiology (88)
- Special Laboratory Methods (90)
- Honors Program in Laboratory Methods (92H)
- Advanced Clinical Laboratory Techniques (110,11)
- Seminar: Medical Technology (120)
- Elements of Administration in Medical Technology (130, 31)
- Basic Electronics of Laboratory Instruments (100)
- Principles in Electron Microscopy (146)
- Electron Microscopic Techniques (147)
- Ultrastructural Changes in Pathology (148)
- Introduction to Clinical Chemistry (150)
- Human Cytogenetics (160)
- Human Cytogenetics Laboratory (161)
- Human Biochemical Genetics (162)
- Human Biochemical Genetics Laboratory (163)
- Hematology (165, 166)

Department of Laboratory Medicine - continued

Others: continued

Seminar: Hematology  
Human Genetic Traits Including Blood Groups (172)  
Analytical Techniques in Laboratory Medicine (173, 174)  
Interpretation of Laboratory Data (175, 176)  
Research Seminar (190)  
Departmental Seminar (191)  
Immunology Seminar (193)

Graduate:

Educational Administration in Medical Technology (140, 141)  
Development of Medical Technology (145)  
Selected Topics in Bacteriology (150)  
Selected Topics in Chemistry (151)  
Selected Topics in Hematology (152)  
Analytical Techniques in Laboratory Medicine (173-174)  
Interpretation of Laboratory Data  
Clinical Chemistry Seminar (185-186-187)

Department of Medicine: The Department of Medicine has two goals in teaching. The first is to instruct the student in certain general skills such as history taking and physical examination which are necessary in the care of patients. Working in small groups with a tutor, the student integrates the information obtained from the patient including his assesment of the social background and emotional reaction to illness with the laboratory and x-ray data in an attempt to design a plan of therapy.

The second goal is to acquaint the student with the body of knowledge represented by the subspecialties of medicine including dermatology. This is accomplished by study of patients with disease, supplemented by reading and lectures.

Undergraduate Courses:

Medical:

Physical Diagnosis (101 w,s)  
Introduction to Internal Medicine (104)  
Clerkship in Internal Medicine (112)  
Externship (180)  
Research in Medicine (181)  
Special Clinical Problems (184)

Department of Medicine - continued

Medical - continued

- Medical Oncology Externship in Medicine at University Hospital (Med 5-5010)  
Elective
- Medical Externship at Veterans Administration Hospital (Med 5-502) - Elective  
Medical Externship at St. Paul Ramsey (Med 5-503) - Elective  
Medical Externship at Northwestern (Med 5-504) - Elective  
Medical Externship at Mt. Sinai (Med. 5-505) - Elective  
Research in Gastroenterology at University Hospital (Med. 5-511) - Elective  
Research Topics in Hematology at University Hospital (Med.5-512) - Elective  
Problems in Clinical Medicine at University Hospital (Med.5-521) - Elective  
Gastroenterology at University Hospital (Med. 5-522) - Elective  
Metabolism and Clinical Pharmacology at University Hospital (Med. 5-524) -  
Elective
- Immunology, Allergy, and Infectious Disease at University Hospital (Med.  
5-524) - Elective
- Cardiovascular Disease at University Hospital (Med.5-525) - Elective  
Electrocardiography at University Hospital (Med.5-526) - Elective  
Renal at University Hospital (Med.5-527) - Elective  
Clinical Hematology at University Hospital (Med.5-528) - Elective  
Clinical Hematology (Abbreviated) at University Hospital (Med.5-529) -  
Elective
- Seminar in Oncology at University Hospital (Med. 5-530) - Elective  
Trends, Methodology, and Techniques in the Delivery of Medical Service  
at St. Paul Ramsey Hospital (Med 5-541) - Elective  
Hematology at St. Paul Ramsey Hospital (Med. 5-542) - Elective  
Cardiology at St. Paul Ramsey Hospital (Med. 5-543) - Elective  
Pulmonary Disease at St. Paul Ramsey Hospital (Med.5-544) - Elective  
Cardiology (EKG) at Veterans Administration Hospital (Med.5-551) - Elective  
Clinical Hematology at Veterans Administration Hospital (Med. 5-552) -  
Elective
- Pulmonary Disease at Veterans Administration Hospital (Med.5-553) - Elective  
Fluid, Electrolyte and Acid-Base Metabolism at Veterans Administration  
Hospital (Med. 5-554) - Elective
- Electrocardiography - Veterans Administration Hospital (Med. 5-555) - Elective  
Cardiology Service at Hennepin County General Hospital (Med.5-561) - Elective  
Renology Service at Hennepin County General Hospital (Med.5-562) - Elective  
Pulmonary Disease at Hennepin County General Hospital (Med. 5-563) - Elective  
Medical Emergency Room at St. Paul Ramsey Hospital (Med. 5-571) - Elective  
Ambulatory Medicine at St. Paul Ramsey Hospital (Med. 5-572) - Elective  
Medical Out-Patient Clinics at Hennepin County General Hospital (Med.5-573)  
Elective

Graduate:

- Clinical Medicine (201)  
Diseases of the Cardiovascular Apparatus (202)  
Research in Medicine (203)  
Diseases of the Chest (205)  
Clinical Conference (206)  
Clinical Pathological Conference (207)

Department of Medicine - continued

Graduate:

Clinical Radiological Conference (208)  
Seminar: Infectious Disease (210)  
Electrocardiographic Conference (211)  
Pigment Metabolism (212)  
Psychosomatic Medicine (213)  
Seminar: Cardiovascular (214)

Department of Obstetrics and Gynecology: Provides course material for medical students and graduate students in the clinical fields of obstetrics and gynecology.

Undergraduate Courses:

Medical:

Obstetrics Lectures (120)  
Introduction to Obstetrics and Gynecology (124 w)  
Clinical Clerkship in Obstetrics and Gynecology (135)  
Externship in Obstetrics (184)  
Externship in Obstetrics (Obst. 5-500) - Elective  
Externship in Gynecology (Obst. 5-505) - Elective  
Externship in Obstetrics & Gynecology (Obst. 5-510) - Elective  
Obstetrics and Gynecology Externship in Clinical Practice (Obst. 5-515)  
Elective  
Problems in Obstetrics and Gynecology (Obst. 5-520) - Elective  
Psychiatric Aspects of Obstetrics & Gynecology (Obst. 5-540) - Elective  
Research in Reproduction (Obst. 5-560) - Elective

Graduate:

Problems in Obstetrics and Gynecology (190)  
Advanced Obstetrics & Gynecology, Part I (201,202,203,204)  
Advanced Obstetrics & Gynecology, Part II (205,206,207,208)  
Advanced Obstetrics & Gynecology, Part III (209,210,211,212)  
Staff Conference Seminar (213,214,215)  
Research (216,217,218,219)  
Clinical Obstetrics & Gynecology (221,222,223,224)

Department of Ophthalmology: It is the general objective of the Department of Ophthalmology to provide the medical student with sufficient knowledge of the function, measurement of function and disease of the visual system, particularly as they relate to systemic diseases. It will provide those medical students with particular interest in the field of Ophthalmology, the opportunity to express it either at the clinical level or in the research laboratory. It will adequately train at the graduate level, physicians for the private practice of Ophthalmology. It will provide certain selected interested individuals additional training so that

Department of Ophthalmology - continued

they may have the necessary background for academic ophthalmology. It will develop a basic research program in the field of Ophthalmology which will embrace the major basic sciences as they are applied to the study of ocular tissues. It will develop a clinical research program which may or may not tie in with the basic research being done in the laboratory but by so doing to acquaint the graduate student regardless of his ultimate goals with the requirements of doing and evaluating good research. It will develop within the framework of the department a service program which will devote itself to certain of the special areas of service which are either best handled in a large center because of the necessary equipment and expertise for which the center can serve as consultant to the individuals in the private practice of Ophthalmology. It will provide the mechanisms for continuing education of both the generalist of family practitioner and the specialist in the field of Ophthalmology.

Undergraduate Courses:

Medical:

Ophthalmology (100)  
Externship in Ophthalmology (180)-Elective  
Ophthalmology Research Problems (190)-Elective

Graduate Courses:

Clinical Ophthalmology (200)  
Practical Ocular Surgery (201)  
Ocular Pathology Conference (202)  
Basic and Applied Ophthalmology (203)  
Seminar: Ophthalmology (204)  
Neuro-ophthalmology (205)  
Refraction (206)  
Ocular Muscles (207)  
Didactic Ocular Surgery (208)  
Pathology of the Eye (209)  
Radiology of the Eye, Orbit, and Head (210)  
External Diseases (211)

Department of Ophthalmology - continued

Graduate Courses continued:

Medical Ophthalmology (212)  
Physiologic Optics (213)  
Ophthalmology Laboratory (214)  
Research in Ophthalmology (215)  
Pathology Seminar (216)

Department of Otolaryngology: The medical student first becomes acquainted with otolaryngology through a series of didactic lectures which emphasize broad aspects of the field and discussions of basic principles when applicable. This provides the necessary first step in familiarization with the content of the specialty. The essence of teaching in the Department of Otolaryngology consists of active student participation in the clinical examination of patients with otolaryngological disorders. This is supplemented by discussions and seminars with the faculty. During this time the student develops skills in the examination (especially indirect laryngoscopy) and interpretation of findings. Students are also encouraged to spend additional elective time in clinical, surgical, and research services in the department.

Undergraduate Courses:

Medical:

Otolaryngology (101)  
Otolaryngology Externship (191) - Elective  
Research in Otolaryngology (Otol 5-194) - Elective

Graduate Courses:

Fundamentals of Sound  
Anatomy & Physiology of Speech & Hearing Mechanism  
Hearing Disorders  
Audiometry I  
Communication Problems of the Hearing Impaired  
Audiometry II  
Hearing Science  
Industrial Audiology & Occupational Hearing Loss  
Auditory Training  
Lip Reading & Lip Reading Methods  
Clinical Methods & Practice in Audiology  
Research  
Diagnosis of Disorders in the Auditory System

Department of Otolaryngology - continued

Graduate Courses:

Selection & Use of Hearing Aids  
Pediatric Audiology  
Seminar: Hearing  
Seminar: Current Issues in Audiology  
Advanced Clinical Methods & Practice in Audiology

Department of Pediatrics: The field of pediatrics is concerned with the basic aspects of human developmental biology during prenatal and postnatal life extending through the entire period of growth and development to maturity. Students obtain experience by participating in the patient-care programs for children in the outpatient and inpatient services of the University Hospitals and in affiliated community hospitals. Working experience in all aspects of diseases as they occur in children is provided. Students have the opportunity to observe and participate in diagnostic and care programs concerned with the premature and the newborn, growth and developmental processes, endocrinology, allergy, cardiology, psychiatry, communicable diseases, and in problems of a nutritional or metabolic nature. There is considerable emphasis on preventive as well as therapeutic medicine. The program provides a broad spectrum of experience concerning all of the medical, psychologic, and social problems that may affect children.

To help the student reinforce fundamental concepts, the program maintains strong emphasis on the application of basic knowledge in the prevention, diagnosis, and management of diseases in infants and children. Opportunities for a special interest in selected areas of pediatrics are provided to interested students.

Undergraduate Courses:

Medical:  
Clinical Lectures in Pediatrics (Ped 120)  
Clinical Clerkship in Pediatrics (Ped 135)

Department of Pediatrics - Continued

Undergraduate Courses:

Medical:

Clinical Pharmacology (Peds5-542)-Elective  
Nephrology at the University Hospital(Peds5-543)-Elective  
Immunology at the University Hospitals (182M)-Elective  
Pediatric Pulmonary Disease(Peds5-544)-Elective  
Infectious Disease at University Hospitals(Peds1820)-Elective  
Pediatric Neurology at the Mayo Clinic(Peds.5-541)-Elective  
Child Psychiatry at the Mayo Clinic(Peds.5-545)-Elective  
Research at Community University Health Care Center(Peds5-571)-Elective  
Research in Pediatrics(Peds 183)-Elective  
The Prenatal Interview as a Predictor of Health Risk areas for the child  
(Peds5-572)-Elective  
Research in Immunocytology(Peds5-573)-Elective  
Inpatient Externship at Hennepin County General Hospital(Peds501)-Elective  
Inpatient and Outpatient Externship at Children's Hospital(Peds502)-Elective  
Inpatient Externship at St. Paul Ramsey (503)-Elective  
Outpatient Externship at University Hospital(511)-Elective  
Outpatient Externship at Hennepin County General Hospital(512)-Elective  
Clinical Experience at Community-University Health Care Center(513)-Elective  
Community Pediatrics at Pilot City Health Center(514)-Elective  
Outpatient Health Care at St. Paul Ramsey Hospital(515)-Elective  
Clinical Pediatrics at the Mayo Clinic(516)-Elective  
Neo-Infant Program(531)-Elective  
Clinical Immunology at University Hospital(532)-Elective  
Pediatrics Cardiology at the Mayo Clinic(533)-Elective  
Pediatrics Cardiology at the University Hospital(534)-Elective  
Infectious Disease(535)-Elective  
Pediatric Hematology-Oncology at University Hospital(536)-Elective  
Pediatric Endocrinology and Metabolism at University Hospital(537)-Elective  
Endocrinology and Metabolism(538)-Elective  
Introduction to Neonatology(539)-Elective  
Pediatric Neurology at University Hospital(540)-Elective

Graduate:

Pediatric Seminar  
Pediatric Clinic  
Pediatric Residency  
Pediatric Special Interest  
Pediatric Research

Department of Physical Medicine and Rehabilitation: The comprehensive medical management of patients with chronic disease and disability requires that the physician be skilled in leading the multidisciplinary approach of the health sciences. The Department of Physical Medicine and Rehabilitation utilizes the

Department of Physical Medicine and Rehabilitation - continued

the rehabilitation center to provide within a single area of University Hospitals the setting in which the multidisciplinary approach can be taught. By example, precept, and tutorial methods the concept of comprehensive care of the patient as the minimal program for adequate patient care is taught. Methods of coordination, communication, leadership, and administration are taught upon a foundation of patient management and the practice of physical medicine. By active involvement the student may become prepared for similar activities in his own professional practice. The rehabilitation process takes place in a setting of research into new techniques and programs for the better management of patients and for the better education of members of the health professions.

Undergraduate:

Medical:

Physical Medicine and Rehabilitation (122)  
Externship in Physical Medicine and Rehabilitation (181)  
Seminar: Rehabilitation Literature (191)  
Adult Rehabilitation Medicine (PMed.5-410)-Elective  
Pediatric Rehabilitation Medicine (PMed.5-411)-Elective  
Arthritis Rehabilitation(PMed.5-412)-Elective  
Amputation Rehabilitation (PMed.5-413)-Elective  
Physical Medicine and Rehabilitation for the Family Physician (PMed.5-414)-Elective  
Psychological Aspects of Chronic Disease (PMed.5-415)-Elective  
Histopathology, Electordiagnosis, and Kinesiology (PMed.5-420)-Elective  
Research in Physical Medicine and Rehabilitation (PMed.5-430)-Elective

Other:

Theory of Therapeutic Exercise (PMed.80A)  
Theory of Therapeutic Exercise (PMed.80B)  
Technique of Therapeutic Exercise (PMed.81A)  
Technique of Therapeutic Exercise (PMed.81B)  
Functional Neuroanatomy & Neurophysiology(PMed.82)  
Theory, Technique of Muscle Function (PMed.83A)  
Theory, and Technique of Muscle Function, Tests, and Measurements (PMed.83B)  
Rehabilitation Procedures (PMed.85)  
Rehabilitation Procedures(PMed.84)  
Evaluation Procedures (PMed.86)  
Orientation to Clinical Education(PMed.87)  
Clinical Education (PMed.88)  
Clinical Education (PMed.89)  
Administration (PMed.90)

Department of Physical Medicine and Rehabilitation - continued

Others:

Administration and Supervision (PMed.93)  
Clinical Training in Occupational Therapy (PMed.94,95,96)  
Introduction to Scientific Research (PMed.97)  
Problems: Physical Therapy (PMed.98)  
Patient Assessment (PMed.101)  
Physical Therapy Clinic (PMed. 103)  
Clinical Medicine in Rehabilitation (PMed.161)  
Problems in Physical Therapy (PMed.180)  
Introduction to Scientific Literature & Research in Physical Therapy (PMed.197)  
Research Problems in Physical Therapy (PMed. 198)  
Introduction to Occupational Therapy (PMed.1)  
Orientation to Physical Therapy and Rehabilitation(PMed.2A)  
Orientation to Physical Therapy and Rehabilitation(PMed.2B)  
Orientation to Occupational Therapy (PMed. 3)  
Orientation to Occupational Therapy (PMed. 4)  
Therapeutic Recreation (PMed.5)  
Medical Terminology (PMed.54)  
Work Evaluation and Community Resources (PMed.55)  
History & Philosophy of Rehabilitation Medicine (PMed.57)  
Bandaging, Aseptic, Isolation Techniques (PMed.58)  
Theory, Technique of Thermo-, Hydro-, Phototherapy (PMed. 60A)  
Theory, Technique of Electrotherapy (PMed.60B)  
Theory of Physical Medicine, Rehabilitation Applied to Medical Sciences (PMed.61,62)  
Senior Clinic (PMed.64)  
Introduction to Scientific Literature (PMed.66)  
Methods of Scientific Research (PMed.67)  
Applied Anatomy (PMed.68)  
Theory and Techniques of Massage (PMed.70)  
Theory: Human Development (PMed.71)  
Theory: General Medical and Surgical Conditions (PMed.72)  
Theory: Psychosocial dysfunction (PMed.73)  
Therapeutic activities (PMed.74)  
Therapeutic activities (PMed.75)  
Techniques of Occupational Therapy (PMed. 76)  
Theory: Physical Dysfunction (PMed.77)  
Group Process Seminar (PMed.78)  
Peripheral Vascular Disease Clinic (PMed.204)  
Electronics in Physical Medicine and Rehabilitation (PMed.211)

Graduate Courses:

Physiatry Service (PMed.200)  
Readings in Physical Medicine and Rehabilitation (PMed.205)  
Conference on Physical Medicine and Rehabilitation (PMed.206)  
Research in Physical Medicine (PMed.211)  
Electrodiagnosis and Electromyography (PMed.212)  
Seminar: Physical Medicine and Rehabilitation (PMed.220)

Department of Neurosurgery: Provides instruction in the discipline of neurosurgery to medical and graduate students.

Undergraduate Courses:

Medical:

Clinical Lectures in Neurosurgery (127)  
Externship at University Hospital (NSur. 5-500)-Elective  
Externship at Veterans Administration Hospital (NSur. 5-510)-Elective  
Externship at Hennepin County General Hospital (NSur. 5-511)-Elective  
Neurosurgery Investigation (NSur. 5-520)-Elective

Graduate Courses:

Neurosurgery Diagnosis  
Neurosurgery Service  
Operative Neurosurgery  
Neurosurgery Research  
Neurosurgery Conference

Department of Orthopedic Surgery: Provides the medical student with the ability to properly examine a patient from an orthopedic standpoint and to provide him with basic information on those problems which he would be called upon to manage in a variety of situations. Provides graduate instruction in the specialty of orthopedic surgery.

Medical:

Principles of Diagnosis, Treatment, Prognosis of Fractures, Dislocations (122)  
Clinical Lectures in Orthopedic Surgery (140)  
Externship in Orthopedic Surgery and Fractures (185)  
Research Problems (186)  
Externship in Orthopedic Surgery (OrSu. 5-185)- Elective  
Externship in Orthopedic Surgery (OrSu. 5-187)-Elective  
Externship in Orthopedic Surgery (OrSu. 5-188)-Elective  
Externship in Orthopedic Surgery (OrSu. 5-189)-Elective  
Research Problems in Orthopedic Surgery (OrSu. 5-186)-Elective

Graduate Courses:

Orthopedic Conference  
Fractures  
Orthopedic Diagnosis  
Pediatric  
Orthopedic Problems and Management  
Orthopedic Pathology  
Orthopedic Operative Surgery  
Orthopedic Anatomy  
Orthopedic Research

Department of Psychiatry: Provides instruction in principle of psychiatry regardless of specialty the student subsequently enters. Instruction in the specialty of psychiatry is provided for graduate students. This department includes clinical psychology.

Undergraduate Courses:

Medical:

Clinical Clerkship in Psychiatry and Neurology (103)  
Basic Behavioral Science (120s)  
Behavior Pathology and Psychiatric Methods (121s)  
Clinical Lectures in Psychiatry (122f)  
Psychological Problems in Medical Practice (PtrA 5-520)-Elective  
Externship in Adult Psychiatry at Hennepin County General Hospital (PtrA5-500)  
Elective  
Externship in Adult Psychiatry at St. Paul Ramsey (PtrA5-501)-Elective  
Externship in Adult Psychiatry at Veterans Administration Hospital  
(PtrA 5-502)-Elective  
Externship in Adult Psychiatry at Fairview and St. Mary's (PtrA 5-503)-Elective  
Clinical Problems in Psychiatry (PtrA 5-510)-Elective

Others:

Descriptive Psychiatry

Graduate Courses:

Problems in Psychiatry (193)  
Child Psychiatry (192)  
Readings: Psychiatry  
Descriptive Psychopathology  
History of Psychiatry  
Special Research Topics  
Psychometric Clerkship  
Internship, Clinical Psychologists  
Advanced Seminar  
Professional Methods in Clinical Psychology  
Clinical Inpatient Psychiatry

Department of Neurology: Provides a series of instructional settings designed to teach basic aspects of clinical neurology, electromyography, EEG, neurophysiology, neurochemistry or serve combinations of these to medical students. Specialty training in neurology for graduate students is conducted.

Department of Neurology - continued

Undergraduate Courses:

Medical:

Clinical Neurology (101)  
Clinical Clerkship in Psychiatry and Neurology (103)  
Externship in Clinical Practice-University Hospital (Neur.5-510)-Elective  
Problems in Basic and Clinical Neurology (182)  
Externship in Clinical Practice-St. Paul Ramsey Hospital (Neur.5-511)-Elective  
Externship in Clinical Practice in Hennepin County General Hospital (Neur.  
5-512)-Elective  
Externship in Clinical Practice-Veterans Administration Hospital (Neur. 5-513)-  
Elective  
Selected Problems in Neurology (Neur.5-120)-Elective  
Nurochemistry-University Hospital (Neur.5-540)-Elective  
Neurochemistry-Pediatrics Neurology-University Hospital (Neur.5-541)-Elective  
Clinical Electroencephalography-University Hospital-(Neur.5-544)-Elective  
Electromyography-University Hospital (Neur.5-545)-Elective  
Neuropathology (Neur.5-550)-Elective  
Clinical Neurophysiology-St. Paul Ramsey Hospital-(Neur.5-555)-Elective  
Genetics-Veterans Administration Hospital (Neur.5-560)-Elective

Others:

Descriptive Neurology (171B)

Graduate Courses:

Problems in Neuropathology (143)  
Clinical Neurology (208)  
Research in Neurology (209)  
Advanced Neuropathology (210)  
Survey of Neuropathology (212)  
Neuropharmacology (213)  
Child Neurology (214)  
Neurological Complications of Internal Disease (215)  
Clinical Neurochemistry (216)  
Electronics of Neurological Instrumentation (219)  
Advanced Clinical Neurology (220)  
Neurochemistry (221)  
Seizure Mechanisms (222)  
Infectious Disease of the Nervous System (224)  
Neuro-ophthalmology (225)  
Neurological-Neurosurgical Conference (226)  
Neurological Development (227)  
Research in Neuropathology (228)  
Behavior Assessment of the Neurology Patient (229)  
Electroencephalography (230)  
Applied EEG and Myography (231)

Department of Neurology - continued

Graduate Courses:

Applied Neuroroentgenology (232)  
Applied Neuropathology (233)  
Neuromuscular Diseases (236)  
Neurological Clinical Pathological Conference (238)  
Neuroanatomy (239)  
Neuropathology Conference (240)  
Neuroradiology (241)  
Neurological Speech Disorders (247)  
Applied Neurophysiology (248)  
Survey of Neurology for Psychiatry Residents (249)  
Clinical Correlative Neuroanatomy (245)  
Neurogenetics (246)

Department of Radiology: Provides instruction in the disciplines of diagnostic radiology, radiation therapy, and nuclear medicine. Training of x-ray technologists is the responsibility of this department.

Undergraduate Courses:

Medical:

Problems in Diagnostic Radiology (184)  
Roentgen Technique (186)  
Externship in Radiology (Rad.5-500)-Elective  
Externship in Radiology (Rad.5-501)-Elective  
Externship in Radiation Therapy (Rad.5-505)-Elective  
Externship in Diagnostic Radiology at University Hospital (Rad.5-510)-Elective  
Externship in Diagnostic Radiology at Hennepin County General Hospital-  
(Rad.5-511)-Elective  
Externship in Diagnostic Radiology at Veterans Hospital (Rad.5-512)-Elective  
Problems in Radiation Biology and Radioactive Isotope Methods (Rad.5-530)  
Elective

Other:

Technique I  
Technique I Lab  
Technique II  
Technique II Lab  
Anatomy  
Nursing Lab  
Nursing Lecture  
Physics  
Math of Exposure  
Equipment and Physics

Department of Radiology - continued

Graduate Courses:

Fundamentals of Radiation Physiology, Nuclear Medicine  
Radiation Biophysics  
Problems, Radiology Biology  
Tumor Clinic Conference  
Research: Radiology Therapy, Nuclear Medicine, Radiobiology  
Dosimetry of Internal, External Radiation Emitte  
Seminar: Radiology, Biophic  
Radiation Therapy Seminar  
Pediatric Rounds  
Grand Rounds  
NUCLEAR MEDICINE  
Biophysics(170,171,172)  
Radiation Physics(f,w,s)  
Nuclear Medicine (104 f,w,s)  
Radiation Dosimetry (211 f,w,s,su)  
Isotope Scan (f,w,s)

Department of Surgery: The courses for medical students are designed to provide the student with a basic knowledge of the pathophysiology of disease and to encourage application of basic science knowledge to clinical surgical diseases in both general surgery and the surgical subspecialties. The students are given an exposure to basic pathophysiology and a study of the etiology, pathogenesis, and diagnosis of various surgical disease entities and how they relate to clinical surgery. In the clinical year, the student is given an opportunity to apply physiological knowledge to surgical diseases through direct patient contact during the surgical clerkship at the University Hospitals and at affiliated hospitals. In addition to the inpatient surgical clerkship, small group seminar sessions with individual members of the full-time staff are offered each afternoon to provide close contact between the students and staff to review basic surgical problems. Particular emphasis is placed upon the acquisition of basic diagnostic skills and upon development of a sound physiological knowledge of surgical diseases. In addition, the student receives instruction in operating room asepsis and pre- and postoperative care of surgical patients.

Department of Surgery - continued

Elective courses are offered in general surgery and all the surgical subspecialties, primarily to increase the scope of clinical exposure and give the student an opportunity to participate in the fundamentals of surgical research.

Undergraduate Courses:

Medical:

Principles of Surgery (121s)  
Clinical Lectures in General Surgery (129)  
Clinical Clerkship (135)  
Cardiovascular Surgery (181)  
Problems in Clinical Investigation and/or Problems in Experimental Surgery (182)  
Externship in Surgery at University-Transplantation and General Surgery (Surg. 5-500) - Elective  
Externship in Surgery at University-Cardiovascular and Thoracic Problems (Surg. 5-501) - Elective  
Externship in Surgery at University (Surg. 5-502) - Elective  
Externship in Surgery at University - Pediatrics Surgery - (Surg. 5-503) - Elective  
Externship in Surgery at University - General Surgical Problems including some Thoracic and Cardiovascular Cases (Surg.5-504)-Elective  
Externship in Surgery at Veterans Administration Hospital (Surg.5-510)- Elective  
Externship in Surgery at St. Paul Ramsey Hospital (Surg. 5-511) - Elective  
Externship in Surgery at Hennepin County General Hospital (Surg. 5-512)- Elective  
Externship in Surgery at Mt. Sinai Hospital(Surg.5-513)-Elective  
Experimental Surgery (Surg.5-520)-Elective

Graduate Courses:

Outpatient Clinic in Surgery  
Proctoscopy and Sigmoidoscopy  
Tumor Clinic  
Surgical Diagnosis  
Surgical Problems and Management  
Operative Surgery  
Surgical Ward Conference  
Surgical-Roentgenological Conference  
Surgical Research  
Surgical Seminar  
Surgery-Medical Pathological Conference  
Peripheral Vascular Surgery  
Surgery-Physiology Conference  
Biomedical-Engineering Seminar  
Transplant Seminar

Department of Urology: Provides a setting for instruction in the field of urological surgery for medical students and graduates.

Undergraduate Courses:

Medical:

Urology Lecture (173)  
Externship in Urology (Urol. 5-180) - Elective

Graduate Courses:

Urological Surgery  
Cystoscopy and Urology Diagnosis  
Urological Conference  
Research in Urology  
Urological Seminar  
Urology-Radiology Conference  
Urology-Pathological Conference

Department of Public Health:

Undergraduate Courses:

Medical:

Medical Statistics I (Pub.H. 90)  
Elements of Preventive Medicine and Public Health (Pub.H. 100)

## Part I G Program

## GRADUATE PROGRAM

Graduate students, including those in Basic Science programs and all Clinical Residents (fellows) are enrolled in the Graduate School of the University and attend courses which lead to the M.S. or Ph.D. degree. The following table lists the number of graduate students or fellows enrolled in the particular Basic Science discipline or clinical specialty for the years 1965 - 1968. Granted degrees are also listed.

<u>Department</u>	<u>Fellows Enrolled</u>				<u>Degrees Granted</u>					
	1965-66	1966-67	1967-68	Fall Quarter 1968	1965-66		1966-67		1967-68	
					MS	Ph.D.	MS	Ph.D.	MS	Ph.D.
<u>BASIC SCIENCES</u>										
Anatomy	41	45	44	42	3	2	1	8	-	3
Biochemistry	82	95	109	90	-	1	-	-	1	-
Microbiology	57	55	60	52	8	6	5	6	3	5
Pathology	33	30	20	23	-	-	-	1	-	-
Pharmacology	29	37	29	31	-	5	-	8	-	8
Physiology	53	47	51	39	-	2	1	3	2	7
<u>CLINICAL SCIENCES</u>										
Anesthesiology	16	21	28	23	-	-	-	-	1	-
Dermatology	14	10	9	12	4	-	-	-	-	-
Laboratory Medicine	0	0	7	8	-	-	-	-	-	-
Medicine, Internal	131	107	115	124	-	1	-	2	3	1
Neurology	25	20	23	26	1	2	1	-	-	-
Neurosurgery	7	8	12	12	-	-	-	-	-	-
Obstetrics & Gynecology	15	12	16	14	-	-	-	-	-	-
Ophthalmology	15	17	18	19	-	-	-	-	-	-

Continued

<u>Department</u>	<u>Fellows Enrolled</u>			<u>Fall Quarter 1968</u>	<u>Degrees Granted</u>					
	1965-66	1966-67	1967-68		1965-66		1966-67		1967-68	
					MS	Ph.D.	MS	Ph.D.	MS	Ph.D.
CLINICAL SCIENCES (Contd.)										
Orthopedic Surgery	22	23	28	14	-	-	-	-	-	-
Otolaryngology	11	13	13	15	-	-	-	-	-	-
Pediatrics	44	47	48	52	-	-	-	-	-	-
Physical Medicine & Rehabilitation	5	9	10	10	-	-	1	-	1	-
Proctology	1	0	0	0	-	-	-	-	-	-
Psychiatry	28	21	24	26	-	1	-	-	1	-
Radiology	52	50	58	64	1	1	1	-	-	-
Surgery	134	120	120	100	-	5	-	11	2	5
Urology	14	20	20	11	1	1	-	-	-	-
TOTALS	829	807	862	807	18	27	10	39	14	29

It is planned that by completion of the proposed facilities, at least 120 graduate students, including clinical department residents, will be added to the various programs.

OFFICE OF POSTGRADUATE EDUCATIONAL ACTIVITIES  
BOX 193 MAYO MEMORIAL BUILDING • MINNEAPOLIS, MINNESOTA 55455

June 23, 1969

TO: Dean Robert Mulhausen

FROM: Lee D. Stauffer

In response to your recent request, I am enclosing the attached information for your use. These sheets show the courses, hours of instruction, and enrollment for the past two academic years as well as the projection for the next academic year.

We are attempting to change the emphasis of the program at this time to insure the involvement of the practitioner in the planning of our educational offerings.

We hope, this next year, to begin the planning of a "cyclic curriculum" which would review systematically, information that we believe the practitioner should possess, in both the clinical and basic sciences. This would make it possible for a physician to schedule a systematic review of medical knowledge over a recurring 2, 3 or 4-year cycle. We anticipate that much of this information should and can be put into the form of programmed learning, or various other visual or audio media and distributed directly to physicians or made available through the hospitals. We plan to put great emphasis on the development of our relationships with the hospitals and practitioners this coming year.

The need for short courses will continue, however, and it may be that several cyclic curricula will emerge, one for family physicians, and others for each of several specialty groups.

We obviously will have increasing and expanding reliance upon the library, audio visual, the Department of Radio and Television, and other educational departments in the University.

LDS/rka  
Enclosures

*RKA*

HEALTH SCIENCES CENTER  
COLLEGE OF MEDICAL SCIENCES

MEDICAL EDUCATION COURSES

OFFICE OF POSTGRADUATE EDUCATIONAL ACTIVITIES

COLLEGE OF MEDICAL SCIENCES

1967 - 1968

<u>NAME</u>	<u>DATES</u>	<u>A.A.G.P. HOURS</u>	<u>ENROLLMENT</u>
Pediatrics	September 19-21, 1967	15	36
Dermatology	October 19-21, 1967	14	32
Radiology (Gastrointestinal)	October 30-November 3, 1967	<u>35</u>	465
Neurology	November 8-10, 1967	18½	27
Ophthalmology (Refraction)	November 15-17, 1967	13½	6
Orthopedic Surgery	November 30-Dec. 1-2, 1967	18	43
Otolaryngology	January 18-20, 1968	14½	39
Obstetrics	January 25-27, 1968	15	29
Psychiatry	February 8-10, 1968	13	26
Internal Medicine	February 19-21, 1968	23	81
Proctology	April 15-19, 1968	28	25
Trauma	April 20, 1968	7½	21
Ophthalmology	April 29-May 1, 1968	<u>21</u>	37
Surgery	May 23-25, 1968	25	142
Anesthesiology	May 23-25, 1968	<u>16</u>	<u>26</u>
TOTAL		277	1035

MEDICAL EDUCATION COURSES

OFFICE OF POSTGRADUATE EDUCATIONAL ACTIVITIES

COLLEGE OF MEDICAL SCIENCES

1968 - 1969

<u>NAME</u>	<u>DATES</u>	<u>A.A.G.P.</u> <u>HOURS</u>	<u>ENROLLMENT</u>
Pediatrics	September 17-19, 1968	19	51
Dermatology	October 18-19, 1968	9	46
Radiology (Nuclear Medicine)	October 21-25, 1968	<u>35</u>	263
Ophthalmology (Refraction)	November 13-15, 1968	13½	6
Orthopedic Surgery (Scoliosis)	November 21-23, 1968	18	80
Otolaryngology	January 16-18, 1969	13½	18
Obstetrics	January 23-25, 1969	15	39
Pediatric Neurology	February 13-15, 1969	14	33
Internal Medicine	February 17-19, 1969	20½	94
Proctology	April 21-25, 1969	26	35
Ophthalmology	April 28-29, 1969	11	48
Anesthesiology	May 5-7, 1969	18	40
Rheumatic Disorders	May 9-10, 1969	11	29
Surgery	May 21-24, 1969	<u>30½</u>	<u>169</u>
	TOTAL	294	951

MEDICAL EDUCATION COURSES

OFFICE OF POSTGRADUATE EDUCATIONAL ACTIVITIES

COLLEGE OF MEDICAL SCIENCES

1969 - 1970

<u>NAME</u>	<u>DATES</u>	<u>A.A.G.P.</u> <u>HOURS</u>	<u>ENROLLMENT</u>
Dermal Pathology	August 18-22, 1969	30	
Fourth Annual Symposium on Kidney Disease	September 20, 1969	6	
Pediatrics	September 23-25, 1969	18	
Workshop on Hypnosis	September 25-27, 1969	18	
Otolaryngology	September 25-27, 1969	15	
Neurological Aspects of Internal Disease	October 2-4, 1969	15	
Medical Oncology Today	October 8-11, 1969	21	
Automotive Medicine	October 16-18, 1969	15	
Obstetrics	October 22-24, 1969	18	
Radiology	October 27-31, 1969	30	
Dermatology	November 6-8, 1969	15	
Diabetes	November 12-14, 1969	18	
Ophthalmology (Refraction)	November 12-14, 1969	18	
Scoliosis	November 17-19, 1969	15	
Psychotherapy in the Office	February 5-7, 1970	15	
Internal Medicine	February 16-17, 1970	12	

Continued --2

Clinical Management of Allergy	March 5-7, 1969	15
Trauma	April 17, 1970	7
Ophthalmology	May 4-5, 1970	12
Proctology	May 4-8, 1970	30
Surgery	May 20-23, 1970	21
Anesthesiology	May 21-23, 1970	15
Clinical Otology	June 18-20, 1970	<u>15</u>
	TOTAL	394

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# UNIVERSITY OF MINNESOTA

## Department of Anatomy

### Programs of Study

The Anatomy Department offers programs leading to the Ph.D. degree. (Students occasionally are accepted for the M.S. degree if this limited training is consistent with their career goals but preference is given to Ph.D. candidates.) The Ph.D. programs are geared to prepare students for independent research and teaching. The department also accepts students in the combined M.D.-Ph.D. and D.D.S.-Ph.D. programs. Students interested in the combined programs should write directly to the respective medical or dental schools.

The program in anatomy is designed to fulfill the needs of the modern anatomist. Anatomy today is concerned with the study of structure at all levels, from the whole organism to molecular structure; it is concerned with the manner in which structure varies with time, physiological state and pathological alteration.

The initial year of the program is devoted to acquiring a broad fundamental knowledge of microscopic anatomy, embryology, neuroanatomy and gross anatomy. In the ensuing years the student concentrates on a program designed to suit his needs. The candidate works under the supervision of a faculty adviser.

Candidates may avail themselves of graduate courses given at the Colleges of Medical Sciences, Engineering, Biological Sciences, and many others, all of which are located on a common campus.

The broad research interests of the faculty are indicated by the information on the reverse side of this page.

### Research Facilities

The Anatomy Department is fully equipped to handle research projects in the several areas mentioned above. Air-conditioned animal quarters housing many varieties are readily available. Equipment includes several electron microscopes, automatic radioactive counters, spectrophotometers, including an infrared spectrophotometer, electronic quantitators, ultracentrifuge, photographic equipment and many other pieces of equipment usually found in departments of biochemistry. Some of these pieces of equipment are linked to the computer facilities available both at the main University and at the Medical Center.

### Financial Aid

USPHS traineeships or University Fellowships are normally offered to acceptable students. Stipends are in keeping with USPHS standards — \$2400 for the first post-baccalaureate year, \$2600 for the years between the first and terminal year, and \$2800 for the terminal year. USPHS trainees receive tuition allowances and further allowances of \$500 for a dependent spouse and \$500 for each dependent child.

### Cost of Study

Tuition and fees are included in the stipends offered to Ph.D. candidates with USPHS traineeships. University Fellowships are tax-free but do not include tuition allowances.

### Cost of Living

Both private and University housing (fraternity and non-fraternity) are available. Limited campus housing for married students also is available ranging from \$70 to \$90 per month. Private housing rates vary widely depending upon accommodations.

### Student Body

A total of approximately 30 graduate students are enrolled in the anatomy program. Total enrollment on the Twin Cities campuses approximates 36,000 students of whom over 7,000 are graduate students.

### The Twin Cities Area

The population of the Twin Cities of Minneapolis and St. Paul numbers about one million persons. It is richly endowed with lakes and parks. Cultural activities include the Minnesota Orchestra housed on the University campus, and several permanent theaters including the nationally famous Tyrone Guthrie Theater. Sports-minded individuals may participate in swimming, fishing, hunting, skiing, etc., within short distances of the campus. Spectator sports include major college sports on campus and professional teams in football (Vikings), baseball (Twins), and hockey (North Stars).

### The University

The University of Minnesota was founded in 1851. It is considered one of the leading educational institutions in the world and is particularly strong in its research activities. The Medical Center includes the Schools of Dentistry, Pharmacy, Nursing, and Public Health, as well as Medicine.

### Applying

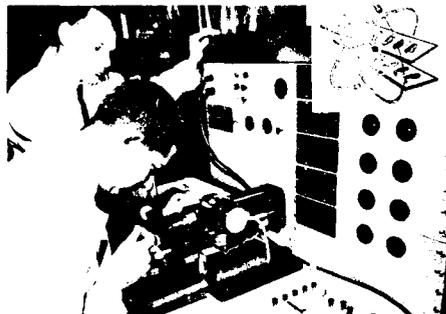
Prospective students are advised to write for applications in the winter prior to the fall quarter in which they wish to be admitted. A bachelor's degree is required which includes 9 credits of biology; a good background in chemistry, physics and mathematics is strongly recommended. Applicants are urged to take the Graduate Record Examination. The deadline for applications is early in February.

### Correspondence and Information

Coordinator of Graduate Study  
Department of Anatomy  
University of Minnesota  
Minneapolis, Minnesota 55455

## THE FACULTY

- Lazarow, Arnold, M.D., Ph.D., University of Chicago; Professor and Head. Special research interests: Cytochemistry, experimental diabetes, pancreatic islet tissue, information retrieval.
- Carpenter, Anna-Mary, Ph.D., University of Pittsburgh, M.D., University of Minnesota; Professor. Special research interests: Histochemistry, quantitation of cell components, pancreatic islet cytology.
- Sundberg, R. Dorothy, Ph.D., M.D., University of Minnesota; Professor. Special research interests: Experimental hematology and cytology.
- Wells, Lemen J., Ph.D., University of Chicago; Professor. Special research interests: Experimental embryology, endocrinology of fetus, organ culture, experimental diabetes.
- Dixit, Padmakar K., Ph.D. (Biochemistry), Medical College, Bombay; Associate Professor. Special research interests: Microchemistry, experimental diabetes, skeletal tissue, biochemistry.
- Heggestad, Carl B., M.D., Ph.D., University of Minnesota; Associate Professor. Special research interests: Fetal endocrinology, experimental diabetes and pregnancy.
- Smithberg, Morris, Ph.D., University of Rochester; Associate Professor. Special research interests: Embryology, teratology.
- Wood, Richard L., Ph.D., University of Washington; Associate Professor. Special research interests: Electron microscopy, cell structure and functional development of the liver.
- Abrahamson, Dean E., M.D., Ph.D., University of Minnesota; Assistant Professor. Special research interests: Quantitative histochemistry, microspectrophotometry, biomedical instrumentation.
- Bauer, G. Eric, Ph.D., University of Minnesota; Assistant Professor. Special research interests: Cytochemistry, endocrinology, protein (insulin) biosynthesis.
- Legg, Peter, M.D., University of Melbourne; Visiting Assistant Professor. Special research interests: Electron microscopy, endocrine, exocrine, cells of pancreas.
- Kvistberg, David R., Ph.D., University of Minnesota; Assistant Professor. Special research interests: Histochemistry, mechanisms of histochemistry, infrared analysis.
- Rigatuso, Joseph, Ph.D., University of Minnesota; Assistant Professor. Special research interests: Histochemistry, electron microscopy.
- Robertson, Donald W., Ph.D., University of Minnesota; Assistant Professor. Special research interests: Fetal metabolism, teratology.
- Coulter, Herbert D., Ph.D., University of Tennessee; Instructor. Special research interests: Electron microscopy, membrane structure.
- Sorenson, Robert L., Ph.D., University of Minnesota; Instructor. Special research interests: Cytochemistry, insulin storage and secretion.
- Hegre, Orion, Ph.D., University of Minnesota; Instructor. Special research interests: Experimental diabetes, fetal endocrinology, organ culture.
- Isaacson, Robert J., D.D.S., Ph.D., University of Minnesota; Lecturer. Special research interests: Oral biology, experimental teratology.
- Speidel, Edna, Ph.D., University of Iowa; Research Associate. Special research interest: Experimental diabetes.
- Baker, Jovita, M.S. (Biochemistry), University of Minnesota; Research Fellow, Experimental Biologist, Laboratory Chemistry Supervisor.
- Brekhus, Elmo, M.S., University of Minnesota; Research Associate. Special research interests: Information retrieval and biomedical communication.
- Goodman, Katherine, M.D., University of Alberta; Research Associate. Special research interests: Information retrieval and biomedical communication.
- Heald, Stuart H., Research Associate. Special research interests: Engineering and biomedical instrumentation, electron microscopy.
- Hoiland, Lucille J., M.D., University of Minnesota; Research Associate. Special research interest: Experimental hematology.
- Schoener, Walter J., B.A., University of Minnesota; Research Associate. Special research interests: Systems programming and information retrieval.



RESEARCH PROGRAM DEPARTMENT OF ANATOMY UNIVERSITY OF MINNESOTA

Scope of Research

Modern research in Anatomy is concerned with the study of structure at all levels, extending from the whole organism to the arrangement of molecules in the subcellular organelles of the cell; it is also concerned with the manner in which structure varies with time, with physiological state and with pathological alteration. The research interests of the departmental faculty members are varied. Our department has a major research emphasis in the following areas: cytochemistry-cell biology, electron microscopy, quantitative histochemistry, experimental teratology and tissue organ culture. A number of studies related to experimental diabetes, hematology and liver disease are in progress. A departmental USPHS program-project grant supports a multidiscipline study in experimental diabetes with major emphasis on the pancreatic islet tissue, the factors which influence the development and progression of diabetes in experimental animals and changes in the capillary basement membrane as it relates to the development of the complications of diabetes. Studies in information retrieval, with particular emphasis on the diabetes literature, relate to more effective methods of document handling in micro-image format and the machine retrieval of full-text using a computer base system. A more comprehensive picture of the departmental research interests is contained in the attached description of the departmental faculty published in the 1969 Peterson's Guide to Graduate Study.

The breakdown of the departmental staff by academic rank and source of funding is shown in the following table.

DEPARTMENT OF ANATOMY STAFF

Rank	No.	Total Salary	State Funds	Other Funds
Professors	3	73,500	60,900	12,600
Associate Professors	4	78,300	53,900	24,400
Assistant Professors	6	78,200	62,500	15,700
Instructors	3	28,250	19,230	9,020
Research Associates	4	38,816		38,816
Research Fellows	4	32,948	300	32,648
Technicians	31	186,055	47,334	138,721
TOTALS		516,069	244,164	271,905

## DEPARTMENT OF ANATOMY RESEARCH AND TRAINING GRANTS

Principle Investigator	Title	Amount	Source of Funds
Arnold Lazarow Professor and Head	Departmental Program Project Multi-discipline Diabetes Research Project	\$120,937	Federal
" "	Departmental Diabetes Research Training Grant	78,457	Federal
" "	Fetal Endocrinology	35,464	Federal
" "	Diabetes Literature Retrieval	171,200	Federal
" "	Departmental Anatomical Sciences Training Grant	97,465	Federal
" "	Diabetes Related Literature Current Awareness Bulletin (University of Minnesota, University of Rochester and Western Reserve University).	17,849	Federal
Dean E. Abrahamson Assistant Professor	The Application of Quantitative Microspectrophotometry and the Evaluation of Normal and Malignant Tissue in Thin Sections	8,740	Private
" "	The Application of a Computer-linked Microspectrophotometer to the Quantitative Evaluation of Normal and Abnormal Tissue in Thin Sections	2,500	State
G. Eric Bauer Assistant Professor	Studies on the Synthesis of Secretory Proteins	11,070	Federal
H. David Coulter Instructor	Structure and Chemical Organization of Biological Membranes	5,000	State
" "	Studies on Communication Between Cells	5,380	Private
Padmakar K. Dixit Associate Professor	Mode of Action of Vitamin D (Mechanism of Calcification of Rachitic Cartilage Induced Vitamind D and Starvation).	2,000	State
" "	Research on Citrate Metabolism in Diabetes	1,350	Private
Joseph L. Rigatuso Assistant Professor	Electron Microscopic-Histochemical Study of Microbody Formation in Regenerating Rat Liver	1,000	State
Malcolm W. Robertson Assistant Professor	Effects of Maternal Hypoglycemia	1,100	Private

DEPARTMENT OF ANATOMY RESEARCH AND TRAINING GRANTS (Continued)

Principle Investigator	Title	Amount	Source of Funds
Morris Smithberg Associate Professor	Environmental Influences on Development of Mice	3,000	State
Robert L. Sorenson Instructor	Studies on Isolated Islets and Isolated Insulin Secretion Granules.	2,000	State
Richard L. Wood Associate Professor	Cytodifferentiation in Embryonic and Fetal Liver.	26,809	Federal
Federal Research and Training Grant Support		559,251	
State Research Support		15,500	
Foundation Research Support		16,570	
TOTAL		\$ 591,321	

### Research Facilities

The departmental facilities include: air-conditioned animal quarters housing many varieties of animals, a walk-in cold room, a tissue culture laboratory, a radioisotope laboratory, and many other laboratories housing specialized facilities. Equipment includes several electron microscopes, automatic radioactive counters, spectrophotometers (including an infrared spectrophotometer), electron component quantifiers, preparative ultracentrifuges, photographic equipment and many other specialized items of equipment. Specific equipment items are linked to the computer at the Biomedical Computing Center. Our current research facilities include:

Type of Laboratory	No.	Square Feet
Faculty and Graduate Student Laboratories	36	10,342
Research Support Laboratories (Electronics, Instrumentation, Isotopes)	7	2,182
Laboratories for Animals	8	<u>2,591</u>
TOTAL		15,115 sq. ft.

## DEPARTMENT OF ANESTHESIOLOGY

Research Program - In general the department is concerned with two objectives:

1. Research training in anesthesiology
2. The accomplishment of specific research projects of both a clinical and basic nature.

Research training provides selected candidates with opportunities to pursue basic training in pharmacology and allied basic sciences (biochemistry, physiology and biostatistics). Extensive clinical training in anesthesiology is a prerequisite. The interdisciplinary environment established at the outset of the program continues to foster development of academically oriented anesthesiologists.

More specifically, our training plan is geared for development of Clinical Pharmacologists in Anesthesiology. Trainees enroll in the same didactic courses, seminars and laboratory sessions as graduate students in pharmacology. Suitable research projects are selected conjointly by the Program Director, Principal Basic Sciences Advisor and Thesis Advisory Committee after consideration of the trainees' interests and technical capabilities. A Ph. D. in Pharmacology is a natural consequence of this training.

Currently - specific research projects involve investigations into drug metabolism, elevation of cardiac fibrillation thresholds, effects of mechanical lung ventilation on pulmonary hemodynamics, post-operative respiratory impairment, and the evaluation of pulmonary function in patients with various lung diseases. Research fellow work under the direction of competent senior investigators can qualify for a Master's Degree upon submission of a thesis and satisfactory performance in a written and oral examination.

Individuals currently involved in research from the Department of Anesthesiology:

F. H. Van Bergen, Professor and Head  
J. J. Buckley, Professor  
H. D. Westgate, Associate Professor  
J. S. Rydberg, Assistant Professor  
J. F. Cumming, Assistant Professor  
Alexander Yue, Research Fellow  
Byron Johnson, Research Trainee  
Douglas Berry, Research Trainee

Research Space Available:

Diehl Hall	F103	245 sq. ft.
	F104	104 sq. ft. (some study area for research fellows)
	F104 1	152 sq. ft.
	F104 2	505 sq. ft.
Mayo Mem	B199	216 sq. ft.
Millard Hall	Some limited space available to fellows in Ph. D. program	

<u>Investigator</u>	<u>Title of Project</u>	<u>Source of Fund</u>	<u>Amount</u>
F. H. Van Bergen	Research Training in Anesthesiology	Institute of General Medical Sciences	\$25, 544 (1968-69)
" " "	A Functional Assessment of Mechanical Respirators	Health Services and Mental Health Administration	14, 209 (1968-69)
J. J. Buckley	Assessment of Postoperative Ventilatory Insufficiency	Public Health National Heart Institute	11, 200 (1968-69)
Department of Anesthesiology	Anesthesiology Special Research	Private	Gifts from former fellows and memorials
M-135 Department of Anesthesiology	Anesthesia Associates	Private	" " "
<u>PENDING</u>			
J. J. Buckley,	Evaluation of New Antiarrhythmia Drugs in Hypothermia	Public Health Service	
F. H. Van Bergen	Research in Anesthesiology	Institute of General Medical Sciences	
H. D. Westgate	Cardiopulmonary Function Changes in Scoliosis	Orthopedic Research and Education Foundation	



#### DEPARTMENT OF BIOCHEMISTRY

There are 10 persons at the rank of Assistant Professor or above funded through the department. In addition, 10 other persons at these ranks, funded via other departments and sources, contribute significantly to our research, teaching and service enterprises.

The teaching is intended to furnish a broad coverage of the basic aspects of biochemistry at the cellular and molecular levels with emphasis on biochemistry as an experimental and rapidly evolving science. An equally important objective of our major courses (for medical and dental students) is attention to disturbances of biochemical processes in disease. Separate courses are given to students of: Medicine, Dentistry, Nursing (2 courses), Medical Technology and to Graduate Students. The graduate student courses are a 3-term survey course and 7 advanced level and specialized courses. Five of the latter are given in alternate years.

The research work in the department is varied in that each senior staff person develops a unique field for investigation. Fields of biochemistry represented at the research and graduate institution levels are: Metabolic enzymology, Calcified tissues, Protein biosynthesis, Physical biochemistry; Steroid hormone metabolism, Protein-polysaccharide structure and metabolism, guanido compound metabolism, Metal-protein interactions, Biochemical genetics, Structure and function of proteins, Cholesterol biosynthesis.

The department of Biochemistry research is funded from the Public Health Service in all but one instance. This exception is a contract from the American Cancer Society. The total amount of funds available for research from these sources is \$666,441.00.

DEPARTMENT OF BIOCHEMISTRY

<u>Principal Investigator</u>	<u>Title</u>
H. R. Gutman	Professor
J. F. Van Pilsum	Associate Professor
U. S. Seal	Lecturer
J. F. Koerner	Associate Professor
D. B. Wetlaufer	Professor
W. D. Armstrong	Professor and Head
L. Singer	Professor
M. E. Dempsey	Assistant Professor
J. Larner	Professor
F. Ungar	Professor
R. D. Edstrom	Assistant Professor
F. Wold	Professor
C. W. Carr	Professor
J. W. Bodley	Assistant Professor

<u>Princ. Invest.</u>	<u>Title</u>	<u>Source</u>
H. R. Gutman	Carcinogenic	PHS
J. F. Van Pilsum	Guandidium Compound Metabolism	PHS
U. S. Seal	Cortisol Binding Protein	PHS
J. F. Koerner	Protein Synthesis following Bacteriophage Infection	PHS
D. B. Wetlaufer	Energetics of Protein Structure	PHS
W. D. Armstrong & L. Singer	Fluoride Metabolism	PHS
M. E. Dempsey	Enzymic Cholesterol Synthesis	PHS
J. F. Koerner	Deoxyribonuclease from <u>Escherichia Coli</u>	PHS
J. Larner	Chemical Mechanisms of Action of Insulin	PHS
J. F. Van Pilsum	Training Program in Biochemistry	PHS
F. Ungar	Cancer Research Training in Steroid Biochemistry	PHS
R. D. Edstrom	Metabolism of Amino heturic Acids	PHS
F. Wold	Protein Structure and function	PHS
D. B. Wetlaufer	Research on Structural & Stability of Nerve Memoranes	PHS
C. W. Carr	Ion Binding Studies	PHS
J. W. Bodley	Transcription & Translational Processes	ACS
<u>Pending</u>		
J. W. Bodley	Translational Processes	ACS -PHS
F. Ungar	Cancer Research Training in Steroid Biochemistry	PHS
F. Ungar	Estrogen Induction of Adrenal Enzymes with mouse tumor virus	PHS
F. Ungar	Regulation of Steroid Sex Hormone Production	PHS

Total Research Space - 14,686 Sq. Ft.

June 2, 1969

Robert O. Mulhausen, M.D.  
Assistant Dean  
College of Medical Sciences  
1360 Mayo

Dear Dr. Mulhausen:

I am responding to your inquiry of May 19, 1969 in connection with the NIH grant application for the development program. Item #1. The following research activities are currently being carried on:

Biochemistry

Carbohydrate metabolism relative to the skin (especially glucose and glycogen.)  
Connective tissue metabolism (especially collagen - normal, disease states, wound healing.)  
Histochemistry - application of new methods in the review of diseases previously studied.  
Photobiology (especially protoporphyria and suncreening in various disease states.)

Electron Microscopy of Skin (especially pigment cells)

Immunology of the Skin

Leprosy - electrophoresis in various clinical types.  
Tissue reaction in inoculated animals.  
Relation between antigens of ocular lens and skin.  
Immunological reactions of drug sensitivities (especially regarding mast cells.)  
Immunofluorescence of patients with lupus erythematosus and with various vesicular and bullous diseases.

Alvin S. Zelickson, M.D. Associate Professor	Training Grant in Dermatology	U S P H S \$105,000 - 3 yrs.)
Alvin S. Zelickson, M.D. Associate Professor	The Melanocyte and Langerhans Cell	U S P H S (not funded)
Alvin S. Zelickson, M.D. Associate Professor	Support of Electron Micros- copist	Minnesota Medical Foundation (\$6,000)
Francis W. Lynch, M.D. Professor & Head	Dermatologic Research Fund	Hill Family Foundation (\$6,500)
Francis W. Lynch, M.D. Professor & Head	Dermatology Training Program	Hill Family Foundation (\$1,500)
Francis W. Lynch, M.D. Professor & Head	Acne Study	Fuller Pharmacy Company (\$1,500)
Francis W. Lynch, M.D. Professor & Head	Dermatology Research	Duke-Lab Foundation (\$5,000)
Francis W. Lynch, M.D. Professor & Head	Histopathology Laboratory	(\$18,000)
Ramon M. Fusaro, M.D., Ph.D. Associate Professor	Erythropoetic Protoporphyrin (R.M. Fusaro & Samuel Schwartz)	N I H (\$50,516 - 3 yrs.)
Ramon M. Fusaro, M.D., Ph.D. Associate Professor	Immunology of Lens and Skin (R.M. Fusaro & William B. Rathbun)	N I H (\$48,831 - 3 yrs.)
Ramon M. Fusaro, M.D., Ph.D. Associate Professor	Ultraviolet Light Protection	Minnesota Medical Foundation or Richardson Merrell (not funded)
Ramon M. Fusaro, M.D., Ph.D. Associate Professor	Development of Ultraviolet Pro- tection in an Animal Model	Private (not funded)
Ramon M. Fusaro, M.D., Ph.D.	Treatment of Acne with Antibiotics	Upjohn Company (\$6,000)

Item #1

- a. In-patient consultations, 5 out-patient clinical sessions per week, 8 in-patient beds. Diagnostic laboratory facilities include dark-field examinations, mycology, a histopathology laboratory.
- b. Hospital patients are those with major dermatologic ills of all types.
- c. Currently 90 senior students per year in the out-patient department and 80 junior students per year.

Item #2

After new space development is expected there will be teaching of 200 students per year in the second and third year programs and 120 per year in the fourth year program. Graduate students will probably number 18. Faculty status is impossible to estimate.

DEPARTMENT OF LABORATORY MEDICINE

Report on Research Program

The major research effort in the Department of Laboratory Medicine which will make use of the projected facilities include the following.

1. Structure and function of heart and skeletal muscle cells in health and disease. Investigators: Drs. Ellis Benson, Andreas Rosenberg, Mary Dempsey, Nancy Staley, Moon Han, Karim Ahmed, and Mr. Ben Hallaway. These studies include: (1) the role of the intracellular and intercellular membranes in excitation and contraction coupling in heart muscle cells. (2) The function of the Z line and abnormalities in the Z line in abnormally functioning muscle cells. (3) Differences in structure and function and enzymatic activity between cardiac and skeletal contractile proteins including myosin, actin, tropomyosin, and troponin. (4) The role of actin conformation change in muscular contraction and (5) binding interactions of calcium and other metal ions with myosin, actin tropomyosin and troponin and their relationships to muscular contraction.
2. Cellular and molecular studies on immunological tolerance and the role of the thymus. Investigators include Edmond Yunis, Osias Stutman, and Miguel Azar. The role of the thymus and other central lymphoid organs in the development of immunological tolerance is under study. The effect of thymic cells and cell free extracts in the production of immunological competence and tolerance is also studied. Carcinogen induced thymomas and their role in immunological function is included in this overall study.
3. Tissue transplantation antigens and antibodies. Investigator, Edmond Yunis. A study of improved means of tissue histocompatibility matching by laboratory techniques is the aim of this project.
4. DNA replications in developing mammals and the role of constitutive heterochromatins in developmental biology. Investigators, Jorge Yunis and Walid Yasmineh. A study of the role of heterochromatin in patterns of chromosomal replication and in normal and abnormal functional states is included. DNA replication patterns are related to abnormal chromosome patterns.
5. Studies on platelet factors in coagulation. Investigator, J. Roger Edson. A study of the interconversions of platelet factor 3 and their relationship to blood coagulation in normal and in abnormal states is included.
6. Studies on complement. Investigator, Henry Gewurz. The role of complement in inflammation and in tissue transplantation and in blood coagulation is being investigated. The discreet role of various complement factors in a variety of abnormal states is included in this study.
7. Mechanism of hydrogen exchange in proteins. Investigators, Andreas Rosenberg, Ellis Benson, Ben Hallaway. The relationship between protein conformation and kinetics of exchange in aqueous medium is under study. The "motility" of protein, as detected by exchange properties, may have important bearing on such biological events as muscular contraction, antibody-antigen reaction and the interaction of heme proteins with oxygen and other ligands.

Research Space Available

<u>Room Number</u>	<u>Sq. Ft.</u>	<u>Laboratory</u>
C 208	270	Chemistry
C 210	150	Chemistry
C 211	210	Chemistry
C 213	170	Chemistry
C 215	170	Chemistry
C 216	110	Chemistry
C 289	350	Chemistry
C 290	150	Chemistry
C 242	150	Hematology
C 244-1	150	Hematology
L 237	200	Immunology
Diehl Hall	1350	Dr. Vernier, Ben Hallaway
203		Electron Microscopy
224		Protein Chemistry

<u>Principal Investigator</u>	<u>Title</u>	<u>Amount</u>	<u>Source</u>
Miguel Azar, Medical Fellow	Cellular & Molecular Studies	\$ 1,500	Minn. Med. Found.
	Mechanism of Immunological Tolerance	36,354 (3 yr.) 13,732 (1st yr.) + \$15,953	NIH-pending
	Cellular & Molecular Basis of Immunological Tolerance	5,850 (\$7,020)	Arthritis Found. - pending
	Nature of Immunological Tolerance	5,570	AMERICAN Heart-pending
	Nature of Immunological Tolerance	5,700	Grad. Sch. Pend.
Mary Dempsey, Assistant Professor	Studies of the Enzymic Reactions of Muscle Contraction	11,000	
David Brown, Assistant Professor	Interrelationships of Calcium, Phosphorus and Amino Acid Transport	2,800	Grad. School
J. Roger Edson, Assistant Professor	Platelet factor 3 rapid availability (RA) factor.	7,074	Minn. Heart - pending
	Further Investigation of newly recognized plasma factor necessary for platelet factor	2,588	Grad. Sch. Pend.
Grace Ederer Associate Professor	Evaluation and implementation of modified Pronase B method for extraction of the "C" carbohydrate of beta-hemolytic streptococci for use in the precipitin grouping reaction in a clinical laboratory.	2,300	Grad. Sch.

<u>Principal Investigator</u>	<u>Title</u>	<u>Amount</u>	<u>Source</u>
J. Roger Edson, Assistant Professor	Investigation of newly recognized plasma factor necessary for platelet factor 3 availability.		
Ellis S. Benson, Professor and Head	Pathology of Myocardial Cell	\$29,124 (34,949)	NIH
		25,553 (30,664)	
	Motility of Myocardial Proteins in Health and Disease	19,811 (25,266)	NIH
	Hydrogen Exchange Studies of Protein Structure	19,252 (24,778)	NIH
Esther Freier, Professor		20,700 (26,468)	
	Development and Evaluation of Clinical Chemistry Methodology	2,100	Grad. Sch. Pend.
	Development and Evaluation of Clinical Chemistry Methodology	2,500	Grad. Sch.
John Matsen, Assistant Professor	Enteric Bacteria in Hospital Infections	1,565	Grad. Sch. Pend.
	Study of Sod. Colistimethate Disc. Eval.	3,000	Warner-Lambert
	Study of Ampicillin Kanamycin	2,500	Bristol
	Susceptibility testing of lincomycins analogs	2,400	Upjohn

<u>Principal Investigator</u>	<u>Title</u>	<u>Amount</u>	<u>Source</u>
John Matsen, Assistant Professor	Study of Antibiotic Cephalexin	\$17,534	Lilly
Andreas Rosenberg Associate Professor	Thermodynamics of $Ca^{++}$ binding to skeletal and heart myosin	4,267	Minn. Heart
	Research on Divalent Cations	18,901 (24,387)	NIH
	Quan. Stud. of $Ca^{++}$ binding to purified myosin from skeletal and cardiac muscle	1,100	Grad. Sch.
Lorraine G. Stewart Associate Professor	Studies on Hypocoagulability induced by antivitamin K compound	869 (1,000)	
Paul Strandjord, Associate Professor	Serum Enzymes, Proteins and Pigment in Liver Disease	21,324 (27,033)	
	Kinetic Studies of Acid Phosphatase	2,000	Grad. Sch.
Osias Stutman, Instructor	Faculty Research Award	91,662 (101,281) 5 yr.	American Cancer-pend.
	Resistance to Carcinogens and Immunefunctions	36,048 (44,028)	NIH - pend.
	Anemia and Induced Thymomas in Mice	4,114	Grad. Sch.
	Carcinogen Induced Thymomas and Thumic Function	4,745	Grad. Sch.-pend.
	Studies of Resistance to Carcinogens	106,000 to 180,000 (3 yr.)	American Cancer-Pend.

<u>Principal Investigator</u>	<u>Title</u>	<u>Amount</u>	<u>Source</u>
Edmond Yunis, Professor	Carcinogen Induced Thymomas	19,544 (25,109)	NIH
	Tissue Transplant Contract	55,426	NIH
	Blood Group Isoantigens and Leukemic and Cancer Cells	13,283 (16,779)	
	Autoimmunity in relationship to immunologic deficiencies produced by thymectomy or occurring spontaneously during aging.	2,000	Grad. Sch.
	Autoimmunity in relationship to immunologic deficiencies produced by thymectomy or occurring spontaneously during aging.	4,081	Grad. Sch. Pend.
Walid Yasmineh, Assistant Professor	Congenital hereditary defects in the metabolism of glucose in human erythrocytes	1,970	Grad. Sch.
	The identification of satellite DNA with constitutive heterochromatin in mammals.	2,725	Grad. Sch. Pending
Jorge Yunis, Associate Professor	DNA Replications in developing and Mature Mammals	20,152 (25,927)	
	Constitutive Heterochromatin and RNA Synthesis	24,200 (29,991)	NIH Pend.