

1963

Bulletin of the University of Nebraska: Annual Catalog of the College of Medicine, 1963-1965

University of Nebraska College of Medicine

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Bulletin of

THE UNIVERSITY OF NEBRASKA

**College of
Medicine
Omaha**

ANNOUNCEMENTS

1963-1964

1964-1965

AUGUST 8, 1963



David W. Saylor

THE HIPPOCRATIC OATH FORMULATED AT GENEVA*

Now being admitted to the profession of medicine I solemnly pledge to consecrate my life to the service of humanity. I will give respect and gratitude to my deserving teachers. I will practice medicine with conscience and dignity. The health and life of my patient will be my first consideration. I will hold in confidence all that my patient confides in me. I will maintain the honor and the noble traditions of the medical profession. My colleagues will be as my brothers. I will not permit considerations of race, religion, nationality, party politics or social standing to intervene between my duty and my patient. I will maintain the utmost respect for human life from the time of its conception. Even under threat I will not use my knowledge contrary to the laws of humanity. These promises I make freely and upon my honor.

* Adopted by the Second General Assembly of the World Medical Association held in Geneva, Switzerland, September 8 to 11, 1948

college of medicine
1963-1964
1964-1965
course offerings

SERIES LXVIII

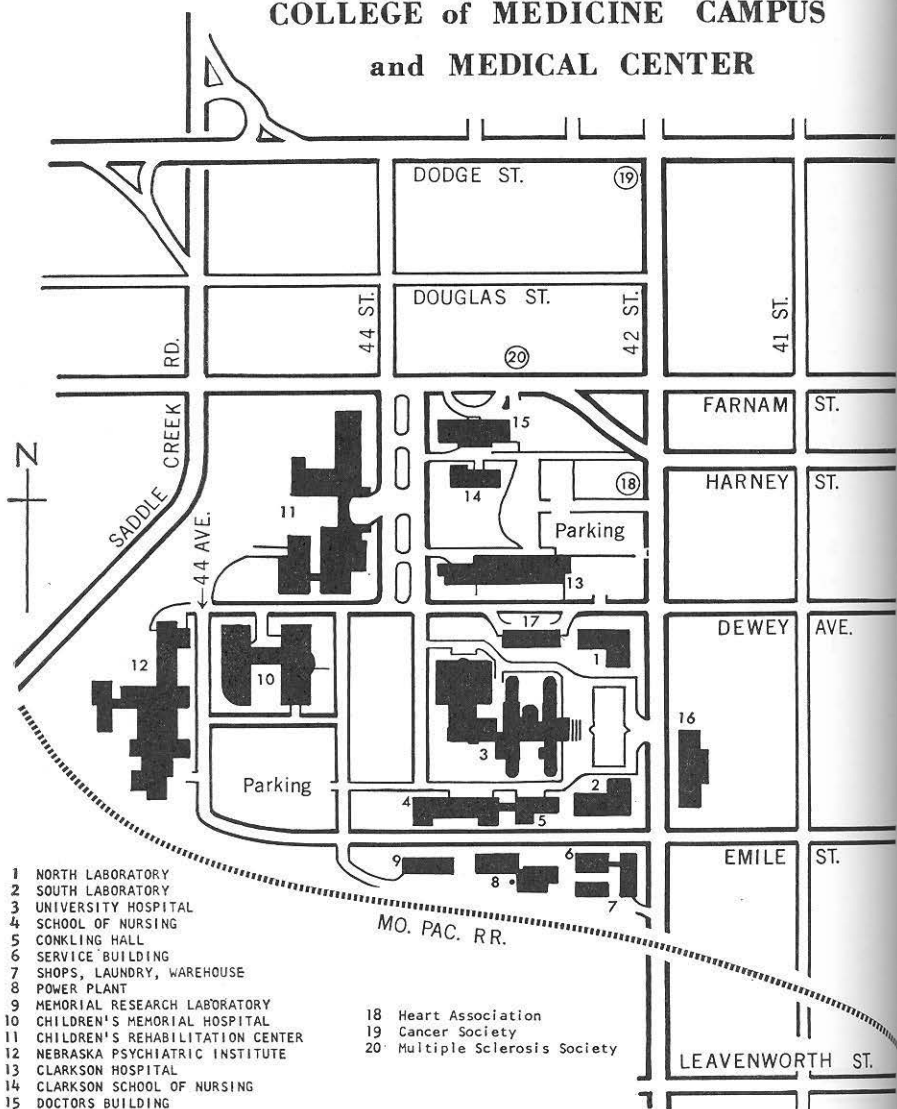
AUGUST 8, 1963

NUMBER 19

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UNIVERSITY of NEBRASKA

COLLEGE of MEDICINE CAMPUS and MEDICAL CENTER



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| <ul style="list-style-type: none"> 1 NORTH LABORATORY 2 SOUTH LABORATORY 3 UNIVERSITY HOSPITAL 4 SCHOOL OF NURSING 5 CONKLING HALL 6 SERVICE BUILDING 7 SHOPS, LAUNDRY, WAREHOUSE 8 POWER PLANT 9 MEMORIAL RESEARCH LABORATORY 10 CHILDREN'S MEMORIAL HOSPITAL 11 CHILDREN'S REHABILITATION CENTER 12 NEBRASKA PSYCHIATRIC INSTITUTE 13 CLARKSON HOSPITAL 14 CLARKSON SCHOOL OF NURSING 15 DOCTORS BUILDING 16 CHILD SAVING INSTITUTE 17 EUGENE C. EPPLBY INSTITUTE FOR RESEARCH IN CANCER & ALLIED DISEASES | <ul style="list-style-type: none"> 18 Heart Association 19 Cancer Society 20 Multiple Sclerosis Society |
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COLLEGE OF MEDICINE CALENDAR
ACADEMIC YEAR 1963 - 1964

Freshmen and Sophomores

Sept. 19, Thurs.	Freshman orientation
Sept. 19, Thurs.	Freshman physical examination
Sept. 19, Thurs.	Sophomore registration
Sept. 19, Thurs.	First half of tuition due
Sept. 20, Fri.	Freshman registration
Sept. 20, Fri.	First half of tuition due
Sept. 23 thru Dec. 13 (12 weeks)	Fall quarter
Dec. 16 thru Mar. 20 (12 weeks)	Winter quarter
Jan. 27, Mon.	Balance of tuition due
Mar. 23 thru June 13 (12 weeks)	Spring quarter

Juniors

Aug. 26, Mon.	Junior registration
Aug. 26, Mon.	First half of tuition due
Aug. 26, Mon.	Classes begin 1:00 p.m.
Aug. 26 thru Nov. 23 (13 weeks)	Fall lecture series
Nov. 25 thru Mar. 7 (13 weeks)	Winter lecture series
Jan. 27, Mon.	Balance of tuition due
Mar. 9 thru June 13 (14 weeks)	Spring lecture series

Seniors

June 24, Mon.	First half of tuition due
June 24 thru Sept. 14 (12 weeks)	Summer term
Sept. 16 thru Dec. 7 (12 weeks)	Fall term didactic courses
Dec. 9 thru Mar. 14 (12 weeks)	Winter term
Jan. 27, Mon.	Balance of tuition due
Mar. 16 thru June 13 (13 weeks)	Spring term
June 14, Sun.	Commencement

Holidays

July 4, Thurs.	Independence Day
Sept. 2, Mon.	Labor Day
Nov. 27, Wed. 5 p.m. to Dec. 2, Mon. 8 a.m.	Thanksgiving vacation
Dec. 21, Sat. 12 noon to Jan. 6, Mon. 8 a.m.	Christmas vacation
March 26, Thurs. 5 p.m. to Mar. 30, Mon. 8 a.m.	Easter vacation
May 30, Sat.	Memorial Day
Oct. 27, 1963	Family Day
April 18, 1964	Pre-Med Day

COLLEGE OF MEDICINE CALENDAR
ACADEMIC YEAR 1964 - 1965

Freshmen and Sophomores

Sept. 17, Thurs.	Freshman orientation
Sept. 17, Thurs.	Freshman physical examination
Sept. 17, Thurs.	Sophomore registration
Sept. 17, Thurs.	First half of tuition due
Sept. 18, Fri.	Freshman registration
Sept. 18, Fri.	First half of tuition due
Sept. 21 thru Dec. 11 (12 weeks)	Fall quarter
Dec. 14 thru Mar. 18 (12 weeks)	Winter quarter
Jan. 25, Mon.	Balance of tuition due
Mar. 21 thru June 12 (12 weeks)	Spring quarter

Juniors

Aug. 24, Mon.	Junior registration
Aug. 24, Mon.	First half of tuition due
Aug. 24, Mon.	Classes begin 1:00 p.m.
Aug. 24 thru Nov. 21	Fall lecture series
Nov. 23 thru Mar. 6	Winter lecture series
Jan. 25, Mon.	Balance of tuition due
Mar. 8 thru June 12	Spring lecture series

Seniors

June 22, Mon.	First half of tuition due
June 22 thru Sept. 12 (12 weeks)	Summer term
Sept. 14 thru Dec. 5	Fall term didactic courses
Dec. 7 thru Mar. 13 (12 weeks)	Winter term
Jan. 25, Mon.	Balance of tuition due
Mar. 15 thru June 12 (13 weeks)	Spring term
June 13, Sun.	Commencement

Holidays

July 4, Sat.	Independence Day
Sept. 7, Mon.	Labor Day
Nov. 25, Wed. 5 p.m. to Nov. 30, Mon. 8 a.m.	Thanksgiving vacation
Dec. 19, Sat. 12 noon to Jan. 4, Mon. 8 a.m.	Christmas vacation
Apr. 15, Thurs. 5 p.m. to Apr. 19, Mon. 8 a.m.	Easter vacation
May 30, Sun.	Memorial Day
Oct. 25, 1964	Family Day
May 1, 1965	Pre-Med Day

ADMINISTRATION

The Board of Regents

	<i>Term Expires</i>
B. N. Greenberg, M.D., York.....	January 1965
Richard E. Adkins, Osmond.....	January 1965
J. Leroy Welsh, Omaha.....	January 1967
Clarence E. Swanson, Lincoln.....	January 1967
J. G. Elliott, Scottsbluff.....	January 1969
Val Peterson, Hastings.....	January 1969

Joseph Soshnik, Lincoln, Corporation Secretary

The University

Clifford Morris Hardin, B.S., M.S., Ph.D., Chancellor of the University.
Adam Carlyle Breckenridge, Ph.D., Vice Chancellor and Dean of Faculties.
Roy Groves Holly, Ph.D., Vice Chancellor for Professional Education and Research, Dean of the Graduate College.
Joseph Soshnik, Ph.D., Vice Chancellor for Business and Finance, Comptroller of the University.
George S. Round, B.S., Director of Public Relations.
James Perry Tollman, B.S., M.D., Dean of the College of Medicine and Superintendent of the University Hospital.
G. Robert Ross, Ph.D., Dean of the Division of Student Affairs.
Floyd Hoover, Ph.D., Registrar.

Emeriti Faculty

John Franklin Allen, B.S., M.D., Professor of Clinical Medicine, Emeritus, and Director of Student Health Service, Emeritus.
Elmer William Bantlin, B.S., M.D., Assistant Professor of Pediatrics, Emeritus.
Rolland Russell Best, B.S., M.D., Professor of Surgery, Emeritus.
John Francis Bresnahan, B.S., M.S., M.D., Instructor in Internal Medicine, Emeritus.
George Worthington Covey, B.S., M.D., Clinical Associate Professor of Internal Medicine, Emeritus.
Harold Everett Eggers, A.M., M.D., Professor of Pathology, Emeritus.
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Herman Frank Johnson, M.D., Professor of Orthopedic Surgery, Emeritus.
Charles Franklin Moon, B.S., M.D., Professor of Obstetrics and Gynecology, Emeritus.
John Clyde Moore, Jr., A.B., B.S., M.D., Professor of Pediatrics, Emeritus.
Sergius Morguils, A.M., Ph.D., Professor of Biochemistry, Emeritus.
Charles Austin Owens, B.S., M.D., Associate Professor of Urology, Emeritus.
Abraham Srol Rubnitz, A.B., M.D., Assistant Professor of Pathology, Emeritus.
William Lefe Shearer, A.B., D.D.S., M.D., Professor of Surgery, Emeritus.
Eugene E. Simmons, B.S., M.D., Professor of Internal Medicine, Emeritus.
Robert James Stearns, M.D., Assistant Professor of Obstetrics and Gynecology, Emeritus.
Chester Hill Waters, Sr., B.S., M.D., Professor of Surgery, Emeritus.
William Albert Willard, Ph.D., Professor of Anatomy, Emeritus.

Senior Consultants

Maine C. Andersen, M.D., Assistant Professor of Internal Medicine, Senior Consultant.
Allen Byford Anderson, M.D., Clinical Associate in General Practice, Senior Consultant.
Arthur Wesley Anderson, Sr., B.A., M.D., Clinical Associate in General Practice, Senior Consultant.
Walter Benthack, B.A., M.D., Clinical Associate in General Practice, Senior Consultant.
Gordon Newell Best, B.S., M.D., Assistant Professor of Internal Medicine, Senior Consultant.

- Waldron Alvin Cassidy, M.D.**, Professor of Otorhinolaryngology and Consultant in Bronchoscopy, Senior Consultant.
- George Leonard Clark, B.S., M.D.**, Assistant Professor of Pediatrics, Senior Consultant.
- Edwin Davis, B.A., M.D.**, Professor of Urology, Senior Consultant.
- Herbert Haywood Davis, M.D.**, Professor of Surgery, Senior Consultant.
- John Calvin Davis, Jr., A.B., M.D.**, Professor of Otorhinolaryngology, Senior Consultant.
- W. Max Gentry, A.B., M.D.**, Clinical Associate in General Practice, Senior Consultant.
- Harlan S. Heim, B.A., M.D.**, Clinical Associate in General Practice, Senior Consultant.
- Wayne McKinley Hull, B.A., B.S., M.S., M.D.**, Assistant Professor of Internal Medicine, Senior Consultant.
- Roletta O. Jolly-Fritz, B.S., M.D.**, Instructor in Neurology and Psychiatry, Senior Consultant.
- J. Jay Keegan, A.B., A.M., M.D.**, Professor of Surgery, Senior Consultant.
- Earl F. Leininger, B.S., M.D.**, Clinical Associate in General Practice, Senior Consultant.
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- James Sylvester McAvin, Ph.G., M.D.**, Associate in Radiology, Senior Consultant.
- Joseph Daniel McCarthy, M.D.**, Professor of Internal Medicine, Senior Consultant.
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- Oliver Francis Reihart, D.V.S.**, Instructor in Pathology, Senior Consultant.
- Donald Benjamin Steenburg, B.S., M.D.**, Clinical Associate in General Practice, Senior Consultant.
- Harry Allen Taylor, A.B., B.S., M.D.**, Senior Consultant.
- Irwin Levi Thompson, B.S., M.D.**, Clinical Associate in General Practice, Senior Consultant.

Active Faculty

- Payson Stone Adams, B.S., M.D.**, Professor of Urology.
- Dean Craig Affleck, Ph.D.**, Associate Professor of Medical Psychology, Neurology and Psychology.
- Herbert George Ahrens, B.S., M.D.**, Clinical Instructor in Internal Medicine.
- John Andrew Aita, Ph.D., M.D.**, Associate Professor of Neurology and Psychiatry and Associate in Physical Medicine and Rehabilitation.
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- George Thomas Alliband, B.S., M.D.**, Associate Professor of Ophthalmology.
- Harley Eric Anderson, B.S., M.D.**, Associate Professor of Obstetrics and Gynecology.
- Lawrence Lloyd Anderson, A.B., M.D.**, Associate in Surgery.
- Robert L. Anderson, B.A., M.S.W.**, Instructor in Psychiatric Social Work, Neurology and Psychiatry.
- Thorwald Robert Anderson, A.B., M.D.**, Clinical Assistant Professor of Pathology.
- Carol Remmer Angle, A.B., M.D.**, Assistant Professor of Pediatrics.
- William Dodge Angle, B.S., M.D.**, Associate Professor of Internal Medicine.
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- Khawia A. Aziz, B.S., M.B.**, Clinical Assistant in Internal Medicine.
- Stanley Monrad Bach, B.A., M.D.**, Assistant Professor of Orthopedic Surgery and Anatomy and Associate in Physical Medicine and Rehabilitation.
- John William Ballew, B.S., M.D.**, Clinical Instructor in Obstetrics and Gynecology.
- Paul Mariin Bancroft, B.S., M.S., M.D.**, Clinical Associate Professor of Pediatrics.
- Clarence Fredrick Banfin, B.S., M.D.**, Associate in Pediatrics.
- Anthony Joseph Barak, B.S., M.S., Ph.D.**, Assistant Professor of Biochemistry.
- John Lucian Barmore, M.D.**, Associate Professor of Surgery.

- Wilbur W. Bartels, A.B., M.D., Clinical Assistant Professor of Orthopedic Surgery.
John Hodgson Barthell, M.D., Clinical Instructor in Dermatology and Syphilology.
George William Bartholow, B.S., M.D., Assistant Professor in Neurology and Psychiatry.
Meyer Beber, B.S., Ph.D., M.D., Professor of Internal Medicine and Associate Professor of Biochemistry.
Edward T. Beitenman, B.S., M.D., Instructor in Neurology and Psychiatry.
Charles Dudley Bell, B.A., M.D., Instructor in Dermatology and Syphilology.
Robert Gordon Bell, M.D., Lecturer in Neurology and Psychiatry.
James Winfred Benjamin, B.A., M.A., Ph.D., Associate Professor of Anatomy.
Arthur Lawrence Bennett, A.B., Ph.D., M.D., Professor of Physiology and Pharmacology (*Assistant Chairman of Department*).
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William Carl Boelter, B.A., M.D., Associate in Obstetrics and Gynecology.
Donald Robert Bohenenkamp, Demonstrator in Bracing and Prosthetics, Physical Medicine and Rehabilitation.
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Warren Quentin Bradley, M.D., Clinical Instructor in Radiology.
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I. William Brill, B.S., M.D., Assistant Professor of Neurology and Psychiatry.
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Marion Porter Brolsma, A.B., B.S., M.D., Clinical Instructor in Internal Medicine.
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James Allan Davis, M.D., Associate in Otorhinolaryngology.
John Byron Davis, M.D., Assistant Professor of Surgery.
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- Neal Balbach Davis, M.D., Assistant Professor of Urology.
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 Earl George Greene, B.S., M.D., Associate in Pathology.

- Robert Leslie Grissom, B.S., M.D., Professor of Internal Medicine (*Chairman of Department*).
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- Louis Everett Hanish, M.D., Instructor in Surgery.
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- Mary R. Haworth, A.B., M.S., Ph.D., Assistant Professor of Medical Psychology, Neurology and Psychiatry.
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- Paul Edmund Hodgson, M.D., Professor of Surgery.
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- Edward Augustus Holyoke, B.S., M.A., Ph.D., M.D., Professor of Anatomy (*Chairman of Department*).
- Leo Thomas Hood, M.D., Assistant Professor of Orthopedic Surgery.
- Harold R. Horn, A.B., M.D., Clinical Instructor in Orthopedic Surgery.
- Dorothy H. Hubbard, B.A., M.S.W., Instructor in Neurology and Psychiatry.
- Theodore Franklin Hubbard, A.B., M.S., M.D., Associate Professor of Internal Medicine.
- Fred Ludwig Humoller, B.S., Ph.D., Associate Research Professor of Chemical Physiology and Pharmacology.
- Howard Beeman Hunt, A.M., M.D., Professor of Radiology and Professor of Physical Medicine and Rehabilitation.
- William A. Hunt, A.B., M.A., Ph.D., Participating Consultant in Neurology and Psychiatry.
- John Raymond Hyde, M.D., Instructor in Anesthesiology.
- Charles Gregory Ingham, M.D., Associate in Neurology and Psychiatry.
- Arthur Leitch Irons, D.D.S., Assistant Professor of Surgery and Coordinator for Medical Education for National Defense.
- Donald Robert Jackson, A.B., M.D., Associate in Internal Medicine.
- Herbert Paul Jacobi, B.S., M.S., Ph.D., Professor of Biochemistry (*Chairman of Department*).
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- George Nick Johnson, M.D., Assistant Professor of Surgery.
- Marilyn Weber Johnson, B.S., M.P.H., Assistant Professor of Preventive Medicine and Public Health.
- Palmer Luther Johnson, B.S., M.D., Clinical Instructor in Obstetrics and Gynecology.
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Ivan Merwyn French, A.B., M.D., Wahoo
Leroy Turner Gathman, B.S., M.D., South Sioux City
Harold Ellis Gentry, B.S., M.D., Gering
William J. Gentry, B.S., M.D., Gering
George Alfred Haslam, A.B., B.S., M.D., Fremont
Richard William Homan, B.S., M.D., Crete
Clifford Dale Howard, B.S., M.D., Blair
Dwight Otis Hughes, B.S., M.D., Fairbury
Wilbur Edward Johnson, A.B., B.S., M.D., Valentine
Kenneth Jack Kenney, M.D., Fairbury
John Lewis McFee, B.S., M.D., Ogallala
Aaron Manasses McMillan, A.B., M.D., Omaha
H. Dey Myers, B.S., M.D., Schuyler
William Charles Niehaus, M.D., David City
Paul B. Olsson, B.S., M.D., Lexington
Samuel H. Perry, A.B., M.D., Gothenburg
Theodore August Peterson, B.S., M.D., Holdrege
Bert W. Pyle, M.D., Gothenburg
Walter M. Reiner, M.D., Holdrege
George Salter, B.S., M.D., Norfolk
Paul Milton Scott, B.S., M.D., Auburn
Floyd Harvey Shiffermiller, M.D., Ainsworth
Rudolph Frederick Sievers, B.S., Ph.D., M.D., Blair
Fay Smith, B.S., M.D., Imperial
Alfred Paul Stappenbeck, B.S., M.D., Humboldt
Carl Herman Louis Stehl, M.D., Scribner
Hubert Clare Stewart, M.D., Pawnee City
Stephen Edward Wallace, M.D., Wahoo
Rex Woodrow Wilson, A.B., M.S., M.D., O'Neill
Elwood Edward Yaw, B.S., M.D., Imperial

COLLEGE OF MEDICINE

History.—The legislative Act of February 15, 1869, provided for the formation of the University of Nebraska at Lincoln, and included provision for a college of medicine. In 1883, the University of Nebraska College of Medicine was established at Lincoln. It continued in operation until the 1887 session of the Legislature withdrew its appropriation, necessitating discontinuance of the college on May 19, 1887. The Omaha Medical College, incorporated at Omaha in 1881, became a part of the University of Nebraska in 1902. The merger resulted in the first two years of the four-year medical course being given in Lincoln and the last two years in Omaha. Since 1913 the entire four-year course has been given in Omaha.

Standing.—The present value of the land, buildings, and equipment of the College of Medicine approximates \$18,000,000. A strong faculty is meeting the demands of the expanding requirements of medical education. Excellent clinical facilities are provided through the University Hospital and Dispensary as well as other affiliated hospitals.

The College of Medicine meets the requirements of the most exacting state examining and licensing boards. Its diploma grants the holder all privileges accorded to graduates of any medical college in the United States. It is a member of the Association of American Medical Colleges and is approved by the Council of Medical Education and Hospitals of the American Medical Association. It maintains high standards in instructional staff and content of courses.

The course of study in medicine covers four years of 36 to 48 weeks each. The first two years in medicine include those laboratory sciences which form the basis for the clinical studies of the last two years. The clinical application of laboratory subjects is emphasized and introductory clinical subjects are given in the second year. The last two years are spent largely in the study of patients in the wards and outpatient department of the hospital. The objective method is followed in laboratories and clinical instruction. In all courses students are encouraged to do a large amount of individual work, meeting in small groups with laboratory and clinical instructors.

APPLICATIONS FOR ADMISSION



Printed application forms are available at the Registrar's Office, College of Medicine, University of Nebraska, 42nd Street and Dewey Avenue, Omaha 5, Nebraska. Students applying for any given class must have their applications completed by November 1st of the year preceding intended entrance.

In considering scholastic records of applicants, greater weight is given to the quality of work than to an excess of credit hours over the minimum required number. Consideration is given also to appraisals of character, personal interviews, scores on the Medical College Admission Test and general fitness and promise of the candidate.

A very limited number of students from states other than Nebraska and not more than two students from foreign countries will be accepted for the freshman class. It is the policy of the Committee on Admissions and Scholastic Standing to require that foreign students spend at least one year, and preferably two, studying in an undergraduate college in this country before applying for admission to the College of Medicine. This

policy has been established in order that the applicant may become familiar with the language, customs, and methods of teaching in the United States, and so that the Committee can obtain a better evaluation of his qualifications and preparation for medicine.

APPLICATION PROCEDURE



Applicants for admission to the College of Medicine must present the following:

1. A completed application form. The blank forms are available from the Assistant Registrar of the College of Medicine;
2. Two *recent* unmounted photographs, 2 x 2 inches head size;
3. An official transcript sent directly from each college or university attended;
4. Two character appraisals from professors of premedical sciences, preferably chemistry, zoology or physics; or official report of Pre-Med Committee;
5. The result of the Medical College Admission Test. Applicants will take the test by the fall of the year preceding intended entrance. Information concerning this test may be obtained from the pre-medical adviser of the College of Arts and Sciences; from the Psychological Corporation, 304 East 45th Street, New York 17, New York; or the Assistant Registrar of the College of Medicine. Students should communicate directly with The Psychological Corporation for specific details.

A personal interview with members of the Committee on Admissions and Scholastic Standing is required of all accepted students. Interview sessions will be held at the campus of the University of Nebraska in Lincoln in November or December. Interviews will be given at the College of Medicine on stated dates. Inquiries should be made of the pre-medical advisers at Lincoln or of the Assistant Registrar of the College of Medicine regarding appointments for interviews.

A fee of \$5.00 must accompany the request for application of a student who is not a legal resident of Nebraska. Remittance should be made by check or postoffice money order and made payable to the University of Nebraska College of Medicine. Currency should not be sent. The fee will cover the cost of handling the application and will not be refunded.

Any applicant who has previously applied for admission and has not been accepted or who fails to enroll after an acceptance must re-apply in the regular manner if he wishes consideration for a subsequent year.

Advanced Standing.—Application for admission to the second or third year medical classes will be considered only from students attending medical schools approved by the Council on Medical Education and Hospitals of the American Medical Association and only if a vacancy exists. An applicant for admission to advanced standing must follow the regular application procedure and must furnish evidence that he has satisfactorily completed courses equivalent in kind and amount to those taken by the class to which admission is sought. He must also present a letter of honorable dismissal from the dean of the medical school last attended. The University of Nebraska College of Medicine reserves the right in every case to give examinations in any or all subjects in which credit is requested.

No student coming from another school will be allowed any privileges in this school which would have been denied him in the school which he leaves.

No student will be admitted to advanced standing in any class while he has a delinquency in any subject. No student may become a candidate for graduation unless he has spent the last two years in residence at this college.

In accordance with the recommendation of the Association of American Medical Colleges, the College of Medicine does not grant any time credit toward the Doctor of Medicine degree to holders of a bachelor's degree; this means that the total time spent by each student taking his medical degree must include, as a minimum, four years of registration in a medical college, the last two years of which must be in residence in the University of Nebraska College of Medicine.

The granting of transfer credit is at the discretion of the Committee on Admissions and Scholastic Standing. Admission to any class does not necessarily carry with it credit in all work previously done by the class since the Committee on Admissions and Scholastic Standing has the right to demand satisfactory evidence of the completion of previous work in that subject equal to that required of the students of this College, and in case the work is not equal to such requirement, the deficiency stands against the student as an "incomplete" until removed.

If a student has been dropped from another medical school because of poor scholarship or unsatisfactory conduct, he is not acceptable for admission to the University of Nebraska College of Medicine.

HONORS PROGRAM



The faculty has authorized a program which is designed to encourage students of exceptional ability to pursue selected subject areas in some depth as well as to acquire a broad and comprehensive knowledge of medical science.

At the end of each academic year each department may recommend to the dean the names of students whose records and interests are to be reviewed by the Honors Committee.

The Honors Committee may select from department-recommended nominees up to three students from each class to be offered the opportunity to pursue a special course of study to be planned in collaboration with a faculty adviser.

GENERAL CONSIDERATIONS IN PLANNING A MEDICAL EDUCATION



The educational program leading to the degree of Doctor of Medicine begins before the student enters medical school. The content and quality of his professional training are vital. It is essential that the student and his advisers have a clear understanding of the objectives which are sought.

The course of study in the College of Medicine is designed to produce an unspecialized physician, soundly grounded in modern science, who, after a variable period of postgraduate education and training, is competent to enter his chosen field of medicine. In broad scope, medical education has three end products. The first, in terms of numbers, is the practicing physician. In addition, the medical investigator and the medical teacher are products of the same educational process. All three are es-

sential to the growth and application of knowledge in the field of medicine. Two of these, the practicing physician and the medical teacher, must be capable both of practicing an art and of applying the natural sciences to medicine. Furthermore, relatively few medical investigators will do research without some responsibility in the teaching or practice of medicine. The Doctor of Medicine, whether he embodies one or all three of these products, deals with people as individuals and as a society. The art of applying scientific methods in the preservation of health and in the treatment of the ill requires that the physician not only be well trained in these methods but also well aware of their limitations.

The growing complexity of our society makes it increasingly necessary that the physician be well founded in the humanities which put him in touch with his society, not only to recognize health needs and to be informed of available facilities, but also to gain an understanding and compassion which are basic to the art of healing. The rapid development of medicine as an applied science, requiring quantitative precision and analytical reasoning in diagnostic and therapeutic procedures, is also placing an increasing premium upon excellence of preparation in these areas. The minimum educational requirements of the past are no longer adequate.

While it should be recognized that there is almost no knowledge or experience which cannot be of value to one preparing for the practice of medicine, it is very clear that the optimum use of one's time in such preparation can be realized only when wise choices are made on the basis of relative value. With time at a premium, the fact that there are directions of emphasis which are definitely more helpful than others is reason enough for listing recommendations for admission to the College of Medicine. This is only a beginning, however, and many choices of electives must be made in high school and college to complete a good preparation for the study of medicine. Recommendations here are intended not to exclude any field of major interest but rather to point to areas in which the limited available time can be spent most advantageously. Not only is the area of study to be considered but also the academic level. When more than one course in the same subject is offered, the student is strongly advised to choose the more substantial rather than the more elementary course. Occasionally, a choice for a given course is wisely made on the basis of the excellent quality of instruction and the depth of scholarship involved irrespective of the area of study.

The following specific educational recommendations have been chosen in recognition of the fact that medicine is progressively becoming more of a quantitative science and less of an empirical art; to follow adequately and to use these current developments the student must be facile with quantitative and analytical methods. However, the physician still must minister to the needs of the whole patient, and he must be prepared to assume an important role in his society. Thus it is imperative that the student acquire a sufficiently broad experience to meet these demands: Either (1) Specific Educational Recommendations or (2) Specific Educational Requirements will meet entrance requirements before September 1966. After September 1966 (1) Specific Educational Recommendations will be in effect.

(1) SPECIFIC EDUCATION RECOMMENDATIONS



High School.—This should be a strong college preparatory course. It is recommended that the student complete two years of study in a foreign

language, four years of English, and as much mathematics and science as possible.

College or University.—A minimum of 90 semester hours (three years of college work) in an accredited college is normally required. In exceptional circumstances, 60 semester hours may be accepted. To provide an opportunity for scholarship in depth, the completion of a college major is strongly recommended. The completion of a bachelor's degree is desirable. In most instances, preparation for medical school can best be achieved by including the following courses:

<i>Course</i>	<i>Minimum Semester Hours</i>
CHEMISTRY	14
The recommendation is for two semesters of general or inorganic chemistry (analytical chemistry may serve as part of this requirement) and a two-semester, complete course in organic chemistry.	
BIOLOGY	12
Unless biology is chosen as the college major, additional electives in this field which may significantly duplicate courses given in medical school are less advantageous to the student than other electives.	
PHYSICS	8
This should include a complete course in physics. The student should register for the course which is commensurate with his mathematical background if more than one is available.	
ENGLISH	12
This must include at least one year of composition.	
MATHEMATICS	9
This should include material through introductory calculus. Familiarity with statistics and with the principles of computers is desirable. If advanced mathematics has been completed through four years in high school, this college recommendation may be modified.	
FOREIGN LANGUAGE	
Although no college foreign language is required, this is considered a valuable elective. Also, it should be understood that this is required by the College of Arts and Sciences of the University of Nebraska, as well as by most other colleges, for the bachelor's degree. It is also required for the degree of Doctor of Philosophy and should be anticipated by any student who is considering graduate work.	
ELECTIVES	
The student is urged to select courses from the general field of the humanities and behavioral sciences and not to limit his training to the above scientific subjects.	

(2) SPECIFIC EDUCATIONAL REQUIREMENTS ◇ ◇

High School.—Sixteen secondary school units are required for admission and must include three units in English, two units in one foreign language (ancient or modern), two units in mathematics (one each of algebra and geometry or an equivalent), and one in science (biology, botany, chemistry, physics or zoology).

College or University.—The University of Nebraska College of Medicine requires a minimum of three years of college work (90 semester hours or 135 quarter hours) in an accredited college. Not more than 66 semester hours credit will be recognized from a junior college. Specific minimum premedical course requirements are as follows:

<i>Course</i>	<i>Semester Hours</i>
CHEMISTRY	14
The requirement is an adequate complete course in general chemistry and an adequate complete course in organic chemistry. Should these total less than fourteen semester hours, they will be subject to approval by the Admissions Committee.	
BIOLOGY	8
Four hours must be in zoology. Half of the credit must be in laboratory work.	

PHYSICS	8
Mechanics, sound, heat, electricity, magnetism and light must be included.	
ENGLISH COMPOSITION AND LITERATURE	6
Students should develop ability to speak and write correct English. Those found deficient in the use of written or spoken English will not be permitted to enter upon or continue the medical course.	
FOREIGN LANGUAGE	6-18
Students must have reading knowledge of a foreign language. Two years of a selected modern or classical foreign language at the college level, or equivalent, is required. This requirement may be met by satisfactorily completing a fourth-semester course in the elected language without having earned college credit in the more elementary courses. Or it may be met by certification of proficiency equal to second-year college level in the elected language.	
ELECTIVES	36-54
A sufficient number of electives is required so that, combined with the required hours above, the total is ninety. It is urged that electives include subjects not related to specific medical requirements. Recommended subjects include psychology, social studies, history, philosophy, and other humanities, to give a broad cultural background.	
Total minimum hours required	90

Credits offered from professional schools which do not regularly receive arts college credit are not accepted for premedical college requirements.

Semester hours of credit in subjects specifically offered in the medical college cannot be used in satisfying admission requirements.

A student applying to the College of Medicine should have a grade average of at least 6.0 in all the required science courses. The grade point of 6.0 is based upon the grading system of the University of Nebraska. The equivalent in other grading systems will be determined by the Assistant Registrar, College of Medicine, and the Committee on Admissions and Scholastic Standing. In determining the equivalent, the grading system and the scholarship requirements of the college or university wherein the work was completed will be taken into consideration.

REGISTRATION AND ADMISSION TO CLASSES ◇ ◇

When an applicant receives notice that he has been accepted for entrance to the College of Medicine, he is required to send a deposit of \$25. This is applied as part payment of the tuition fee for the first semester or is forfeited if the applicant fails to register in the class for which he was accepted.

Veterans entering under PL-550 must submit on day of registration a Certificate of Education and Training (VA Form 7-1993) approved for a program with the objective of Doctor of Medicine degree, indicating the University of Nebraska College of Medicine as place of training.

Registration is accomplished on the day indicated in the official calendar. A fee of \$3.00 is charged any student who, unless excused by the Dean, seeks to register later than this day. A fee of \$2.50 is charged for reregistration. Any change whatever in a registration once made is considered as a reregistration. No work done in the College of Medicine may be credited without proper registration. No student may add any subject to his schedule or drop from it any subject for which he has been regularly registered without written permission from the Dean.

Class Standing and Promotion.—The standing of a student in any course is determined by the instructors in charge of the subject, by examinations, by personal observation and by other methods of evaluation.

In order to be eligible for promotion, students of the first, second and third years are required to maintain a weighted average of 75% or more with no course grade below 70%. Students of the fourth year may have no course grade below 75%.

Any course which, for good reason, has not been completed, but in which progress has been satisfactory, may be reported as "incomplete." A student may not register for either the sophomore or the junior year with an existing incomplete still on his record. A senior student must remove any incomplete, acquired during the third year, by the middle of the senior year.

Failure.—Failure is recorded if:

1. A student receives a grade below 70% in any course during the first, second, or third year;
2. Receives a grade below 75% during the fourth or senior year;
3. Earns an over-all weighted average of less than 75% in any academic year.

A student in the first or second year of medical studies who fails only one course, if other course grades are satisfactory, may repeat that course in a summer school session provided the course for which he plans to register is approved by the department in which failure occurred.

Successful completion of such approved course will make the student eligible for promotion provided he earns a grade of 75% or better and provided his over-all weighted average is 75% or better.

Any student who fails more than one subject in any academic year may petition the Admissions and Scholastic Standing Committee to be permitted to repeat the entire year or to repeat only those courses in which failure occurred.

Any student who is reported to be failing in half or more of the course hours of the academic year in which he or she is registered may be asked to withdraw, if in the judgment of the course instructors and of the Scholastic Standing Committee continuation would appear to be ill advised. Student discipline will remain unchanged.

A student who has failed twice here or elsewhere in the same subject is not eligible for registration in that subject at this college.

Comprehensive Examinations.—Students who are completing the sophomore year will be required to take National Board Part I Examinations.

Eligibility to enter the third year will be determined on the basis of the student's average grades in the first and second years, and his performance on National Board Part I Examinations.

Part of the evaluation of students completing the fourth or senior year is a comprehensive examination. Part of the senior comprehensives usually include National Board Part II Examinations.

Student Discipline.—Student discipline will be handled by the Dean of the College of Medicine. A student who, by quality of work or conduct, indicates an unfitness to enter the medical profession may be required at any time to withdraw from the medical college. Recommendations for suspensions, dismissals, or other suitable action as the case warrants, will be made to the faculty of the College of Medicine, the Chancellor, and the Board of Regents. The Dean may appoint a committee of the faculty to advise him on such matters.

Absence or Withdrawal.—Attendance at less than 80 per cent of the scheduled lectures and recitations or 85 per cent of the scheduled laboratory and clinical hours constitutes a failure in any course and shall be so reported.

The Dean of the College of Medicine is the adviser of all students in the College of Medicine. A leave of absence for a short time may be granted by the Dean. This is merely a justification for absence and not an excuse from any work. If a student in good and honorable standing finds it necessary to withdraw from the University before the close of a quarter, the Dean grants him permission to do so. If he is in good standing and is not a minor he is given honorable dismissal from the University at his own request; if a minor, at the request of his parents or guardian.

REQUIREMENTS FOR GRADUATION



The degree of Doctor of Medicine is granted only under the following conditions:

1. The candidate must be at least 21 years of age;
2. He must possess a good moral reputation;
3. He must have complied with all the requirements for admission;
4. He must have pursued the study of medicine for at least four years and must have passed all required courses and examinations of the College of Medicine, University of Nebraska (the last two years' work must have been taken at this institution);
5. He must have written an acceptable paper on an examination posed by the Examinations Committee at the end of the senior year, and also have passed all departmental examinations;
6. He must have written and presented an acceptable, typed senior thesis;
7. He must have discharged all indebtedness to the University of Nebraska.

The degree of Doctor of Medicine *cum laude* may be conferred upon a student who has made a high scholastic record, and who, in addition, has in the course of his medical studies performed some original research. Such a student must be recommended by the department in which the original work was done. Usually he must stand in the upper 10 per cent of his class.

Courses Leading to the Degrees of Bachelor of Arts or Bachelor of Science and Doctor of Medicine.—Students who have transferred from the University of Nebraska College of Arts and Sciences may at the end of their fourth year earn the Bachelor of Arts degree or Bachelor of Science degree by:

1. Completing the group requirements of the College of Arts and Sciences;
2. Completing two minors or one major;
3. Using the subjects of the first year of the medical course as a major, all of which must be completed satisfactorily.

Both of these degrees are conferred by the College of Arts and Sciences at a Commencement on the Lincoln campus.

Candidates for baccalaureate degrees in institutions other than the University of Nebraska may arrange with their colleges to accept tran-

scripts of the work of the first two years in medicine to apply to such degrees, or otherwise satisfy the requirements of those institutions.

Courses Leading to the Degree of Bachelor of Science in Medicine.—Only students presenting premedical college credits of high standard and who have satisfactorily completed all courses of the first two years in medicine, the last year of which shall be in residence in this institution, but who have not fulfilled the requirements for the degree of Bachelor of Science or Bachelor of Arts in the College of Arts and Sciences, may become candidates for the degree of Bachelor of Science in Medicine.

FEES AND EXPENSES

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All students who are legal residents of Nebraska and who carry a full student load will pay a single annual fee of \$525. Nonresident students will be charged a single annual fee of \$765. Adjustments may be made in the case of students carrying less than the full student load. One-half of the tuition is due at registration, the balance on January 30.

The annual fee includes matriculation, registration, medical, laboratory, library, diploma, and course fees. In case of undue usage of materials or breakage or loss of equipment other than that allotted to each course, and because of negligence on the part of the student, a penalty charge will be levied based on the fair value of the material and equipment so lost or broken.

Fee Refunds.—A student who withdraws from the University during any term for which he registered is entitled to claim a refund of a portion of his fees. A refund schedule is available at the Finance Office.

Miscellaneous Fees.—Candidates for a degree to be awarded at public exercises shall be present at such exercises, except as herein provided. A candidate must make application and show just cause in order to obtain the necessary faculty recommendation to receive a degree *in absentia*. Candidates to whom diplomas or certificates are awarded *in absentia* shall pay a special fee of \$10. The following fees are not included in the schedule listed above:

Late registration	\$ 3.00*
Transcript—one copy furnished free	
Each additional original	1.00
Degree in absentia	10.00
Special examination, each course	5.00
Photostatic copy of diploma, 2 copies	1.00
Cap and gown rental fee—amount fluctuates.	

Expenses.—Board can be obtained in the vicinity of the College campus at a cost of approximately \$20 to \$25 a week and comfortable rooms for about \$40 a month. Students rooming together can obtain comfortable rooming quarters at slightly less than this amount. One hundred twenty-five to one hundred fifty dollars a year should be allowed for books and instruments. The average expense of the student for a school year, including board and room, books, instruments (exclusive of microscope and other special equipment) and all fees is between \$1600 and \$1800.

MISCELLANEOUS INFORMATION

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Form of Payment.—To avoid misunderstanding as to the amount charged for fees, checks on personal accounts will be received only when

* This charge is made to all students paying during the first week following the date the tuition installment falls due. An additional charge of \$1.00 is made for each additional week after the first week of late registration.

written for the exact amount of the fees. Parents or guardians should write checks for fees and for other expenses separately; if this is not done, students should deposit funds in a local bank and give personal checks for the amounts of the fees.

Remittance by mail should be by draft, money order, or cashier's check. Do not send coin or money except by registered mail. It is impossible to trace money lost in the mail and University officials cannot be held responsible for such loss.

Housing.—Although the College of Medicine has no on-campus housing for medical or technology students, the Assistant Registrar's Office maintains listings of rooms, apartments, duplexes, and houses reported available.

Nonresident Students.—According to Nebraska law, any student whose residence is not Nebraska is required to pay the nonresident fee.

A student's right to classification as a resident for purposes of registration in a state educational institution must be determined under the provisions of Sec. 85-502, Revised Statutes of 1943, Reissue of 1958.

Any student who has been classified as a nonresident student who believes he can qualify as a resident may secure from the University Comptroller a residency application form and, when it is properly filled out, file such form with the Comptroller for review and ruling. The form must be filed in the Office of the Comptroller *before the end of the ninth week* of the term for which the tuition fee was charged.

The exact wording of the state law on residency is given on the application form.

Students who are interested in the requirements for residency should write the Comptroller's Office, University of Nebraska, Lincoln 8.

Microscopes.—Students are required to provide suitable microscopes for their own use. Inquiries regarding specifications for microscopes as recommended by the faculty may be obtained by addressing the Assistant Registrar, College of Medicine.

GRADUATE WORK



Graduate course work in the field of the Medical Sciences is offered in eleven departments: Anatomy, Biochemistry, Internal Medicine, Microbiology, Neurology and Psychiatry, Obstetrics and Gynecology, Orthopedic Surgery, Pathology, Pediatrics, Physiology and Pharmacology, and Radiology. Four of these departments (Anatomy, Biochemistry, Microbiology, Physiology and Pharmacology) offer independent majors leading to the master's degree or to the Ph.D. degree. Three additional departments (Neurology and Psychiatry, Pathology, and Radiology) offer independent majors leading to the master's degree only. The eleven departments also cooperate in offering an interdepartmental area program which permits the student to pursue a course of study for the master's or the Ph.D. degree with concentration in the medical sciences rather than in a specific department.

The requirements for admission to an independent department are as follows: An applicant for admission for work leading to an advanced degree with specialization in a department of the pre-clinical medical sciences (Anatomy, Biochemistry, Microbiology, Pathology, Physiology and Pharmacology, and Radiology) must comply with the rules governing ad-

mission to the Graduate College, and also with any specialized rules governing admission for study in the department in which he expects to major. In general the applicant will, therefore, need to present a Bachelor of Science or a Bachelor of Arts degree from a recognized college or university including undergraduate preparation constituting an acceptable major in the department in which he expects to carry his work.

Admission for graduate work leading to the Master of Science or Doctor of Philosophy degrees under the interdepartmental area program may be granted to students from any of the following categories:

1. Students with Bachelor of Science or Bachelor of Arts degrees from recognized colleges or universities who have received satisfactory grades in the regular medical courses in Micro-anatomy, Biochemistry, Introductory Physiology, and Microbiology or who attain an acceptable grade in a qualifying examination in basic medical sciences;
2. Students with a baccalaureate degree and the degree of Doctor of Medicine with an acceptable record;
3. Students with a master's degree from an acceptable college and the equivalent of two semesters' credit in the basic medical sciences;
4. Students from the College of Medicine who have bachelor's degrees, who have completed the first two years of the regular curriculum in the College of Medicine, or its equivalent, and who have attained acceptable grades in their courses or passed a qualifying examination in basic medical sciences.

For admission for work in the Department of Neurology and Psychiatry, leading to the degree of Master in Psychiatric Nursing, a student must have completed an approved professional program in nursing with a bachelor's degree from a recognized college or university. As a prerequisite to admission for work leading to the degree of Master in Psychiatric Occupational Therapy, a student must have been graduated from an accredited school of occupational therapy and hold a bachelor's degree from a school or college of recognized standing. For either degree program acceptable evidence will also need to be submitted on the student's personal qualifications for psychiatric nursing or for psychiatric occupational therapy, respectively.

A student registering for graduate work in the medical sciences must comply with the general requirements of the Graduate College and with any special rules established by the graduate committee of his major department, or if the major is in medical sciences, by the interdepartmental area committee. Certain special rules which are applicable to all students in the medical sciences regardless of the major are set forth in the paragraphs which follow. Other rules which pertain to the work in specific departments or in the interdepartmental area are indicated under the headings designating the respective departments.

Graduate students who are admitted with deficiencies in the medical sciences may, by permission of the appropriate graduate or area committee and approval of the Dean of the Medical College, register for courses on the College of Medicine campus in preparation for their qualifying examinations. Such graduate students may, upon the passing of qualifying examinations, make application to the appropriate graduate or area committee for graduate credit in certain medical courses successfully completed. The graduate or area committee may make recommenda-

tion for such credit on the basis of the attainment and aptitude of the applicant. In any case, at least one-half of the total credit for the master's degree shall be taken in graduate courses listed as 350 and above. Medical courses for which partial or total graduate credit may be allowed are listed under the respective departmental headings in the sections which follow.

Graduate students may be required to attain proficiency in their field of concentration by participating in the instruction of medical students for at least one quarter in a regularly required course in the College of Medicine. A student who fails to earn an average grade of at least 7 may not continue his program of study without the special permission of the appropriate graduate or area committee.

A student who wishes to become a candidate for an advanced degree with concentration in the medical sciences must select work in the departments which have been approved to offer graduate work. He may elect to do his thesis research in any one of the eleven cooperating departments. The distribution of graduate work shall be such that not more than two-thirds of the total program, including thesis research, shall be in the major field of study, with a remainder in at least one other department for candidates for the master's degree, and two other departments for candidates for the degree of Doctor of Philosophy.

Candidates who select one of the preclinical departments for their thesis research may come from any of the four categories (for admission) listed on page 28. They may select other departments for additional work.

Candidates who select one of the clinical departments for their thesis research must have qualified for admission through Category 2, page 28. They must select preclinical departments for additional work. Such students may be required to serve as residents for one year before being admitted to the Graduate College. While fulfilling their minor (preclinical) requirements, these candidates must be assigned to the minor department or departments during at least one-third of the total hour requirement for the degree sought.

Candidates electing to work in the interdepartmental area will do their work under the supervision of the area committee: Professors Gibbs, *Chairman*, Grissom, Holyoke, Hunt, Jacobi, McFadden, McIntyre, McWhorter, Musselman and Wittson; Associate Professor Waters; Assistant Professor Pearse.

GRADUATE FEES



All students who are legal residents of Nebraska and who carry a full schedule (12 or more hours) in any quarter will pay a fee of \$88 per quarter. Nonresident students will be charged a fee of \$168 each quarter. The single fee includes—in addition to course charges—registration, library, diploma, and Student Health fees. For additional miscellaneous fees, consult the Bulletin of the Graduate College.

A resident student who originally registers for less than 12 quarter hours will be charged one-twelfth of \$88 for each quarter hour registered up to and—if courses are added later—including the twelfth quarter hour. Quarter hours added thereafter will be free of charge.

A change-of-registration fee of \$2.50 is charged in addition to the regular tuition for any changes made from the original registration.

A nonresident student who registers for less than 12 quarter hours will be charged one-twelfth of \$168 for each quarter hour registered up to and—if courses are added later—including the twelfth quarter hour as well as the \$2.50 change-of-registration fee for each change of registration.

For thesis publication and binding fees, consult the Librarian of the College of Medicine before starting thesis.

Teaching and Research Assistantships.—A graduate student holding an appointment as a teaching or research assistant during a quarter or summer session is required to pay only the administrative fee, provided the appointment carries a University stipend equal to at least the maximum tuition fee of \$168 for a quarter, or for the summer. If the stipend received by an assistant for an academic year (three quarters) is equal to at least the maximum fee for all four quarters (\$672), he will pay only the administrative fee for the summer session following, or intervening between, quarters for which he is appointed, even though he does not hold an appointment for the summer session.

The administrative fee is \$20 for a registration of 12 or more hours during a quarter. If an assistant is registered for less than 12 hours during a quarter, he pays only one-twelfth of \$20 for each hour registered up to and—if courses are added later—including the twelfth quarter hour.

Graduate Fellowships.—A student must carry a full program of graduate study or research for each quarter during which the fellowship stipend is received. Recipients of Regents Tuition Fellowships are required to pay only the administrative fee of \$20 for each quarter.

GRADUATE REGISTRATION



Registration will be accomplished during the early part of each quarter in consultation with the chairmen of the different departments in which the graduate work will be carried on.

UNIVERSITY STAFF EXEMPTION



Members of the academic-administrative staff employed full time may be permitted to register for not more than 6 credit hours per quarter in not more than two courses, for which the charge is \$1 plus a \$5 matriculation fee. All such registrations must carry the signed approval of the chairman of the department and the dean or director of the college, school, or division in which the staff member is employed during the period for which he is registered.

Academic-administrative staff members of the University employed by the Nebraska Psychiatric Institute are eligible for this staff exemption.

CONTINUING EDUCATION



Continuing education is offered to practicing physicians, nurses, and ancillary medical groups. From fifteen to twenty courses, provided as a cooperative project by the College of Medicine and the University Extension Division, are given each school year.

Well-known authorities from throughout the country and from our own faculty take part in these courses, each of which is announced by mail to those interested at least one month prior to the course date.

Further information can be obtained by writing to the Director, Office of Continuing Education, College of Medicine, 42nd Street and Dewey Avenue, Omaha 5.

FELLOWSHIPS AND GRADUATE ASSISTANTSHIPS

Fellowships are available to students who qualify for graduate study and research in the medical sciences. There are also part-time medical student fellowships from several sources including federal agencies, industry, and national as well as local health associations. These are designed to provide summer or part-time employment which includes research experience. Application for full fellowships should be made to the chairman of the department in which the student wishes to work. Application for summer fellowships should be made to the Chairman of the Committee on Scholarships and Awards. Graduate assistantships are available to students of exceptional ability to give them opportunity to do research in the medical sciences and fulfill the requirements for a Master of Science or Doctor of Philosophy degree.

The C. W. M. Poynter Foundation Fellowship.—A fellowship under the sponsorship of the Poynter Foundation provides a stipend of \$2,000 for a period of ten months, during which time the recipient will be expected to devote his entire time to research in the Department of Anatomy. Appointment is made by the chairman of the Department. Applicants should have completed two or more years of medicine and have demonstrated ability and aptitude for investigative work. The recipient may, if he desires, become a candidate for an advanced degree in the medical sciences.

SCHOLARSHIPS

Alpha Kappa Kappa Alumni Association Scholarship.—An annual grant of \$200 is awarded to a scholastically worthy and deserving student who is recommended by the Dean and approved by the Loan Committee of the Nebraska Medical Education Fund.

The George E. Lewis, Sr., Fund.—Through the generosity of Dr. George E. Lewis, Jr., funds for one or more scholarships for freshman or sophomore students are made available as a memorial to his father. These scholarships are awarded by a committee composed of the Dean and four appointees. Application should be made to the Dean.

The University of Nebraska Upperclass Regents Scholarship.—Twenty-two \$100 scholarships are made available annually by the Board of Regents to be awarded to sophomore, junior, and senior medical students on the basis of high scholarship. Application should be directed to the Dean. The award is made by the University Committee on General Scholarship Awards.

Donald Walters Miller Scholarship.—Upon recommendation of the Dean, a medical or graduate student may compete for one of three or four \$1000 scholarships made available annually by Mrs. Donald Walters Miller of Lincoln. These are awarded to students throughout the University on the basis of scholastic ability, educational and professional objectives, character, temperament, and financial need. A special University committee makes the award each spring.

Nu Sigma Nu Alumni Association Scholarship.—An annual grant of \$100 is awarded to a deserving student who is recommended by the Dean and approved by the Loan Committee of the Nebraska Medical Education Fund.

The following scholarships and fellowships are awarded on the basis of recommendation to the Dean by the Medical College Committee on Scholarships and Awards:

Jetur Riggs Conkling and Jennie Hanscom Conkling Foundation.—The will of the late Clementine C. Conkling provides for the creation of a trust to be known as the "Jetur Riggs Conkling and Jennie Hanscom Conkling Foundation," the income of which is used by the Regents of the University of Nebraska in providing scholarships for deserving medical students. Scholarships may be awarded only after the close of the students' first year in the Medical College.

August Frederick Jonas Senior Memorial Fund.—This fund was established by Mrs. A. F. Jonas of Omaha to provide assistance for needy students who are judged worthy on the basis of scholastic attainment, character and promise.

The Sidney R. Kent Fellowship in Medicine.—An award is available annually to the student in the College of Medicine who has made the most outstanding record and who desires to pursue further work in medicine. Such study may be pursued either at the University of Nebraska or at some other institution agreeable to the Committee. Details of this award may be learned on application to the Dean's office.

Faculty Woman's Club Scholarship.—An award of \$150 is made annually to the most worthy woman medical student finishing the first year.

Avalon Foundation Scholarships.—The Avalon Foundation grant to the College, made in August 1961, permits the granting of part or full tuition scholarships to scholastically worthy students in need. These scholarships will be granted in collaboration with the Student Assistance Committee.

Pfizer Laboratories Medical Scholarship.—For several years a scholarship has been made available annually to a particularly deserving student.

LOANS



There are a number of funds available to the University of Nebraska College of Medicine from which money can be lent to deserving students who are in need of financial assistance. Generally they are reserved for students who have established themselves as able and worthy during the completion of at least the first year in medical school.

Applications for loans from any of these funds should be made to the Student Assistance Committee on forms which are available in the Registrar's office.

Ordinarily the Student Assistance Committee will accept applications during a period ending about one month before the dates on which payment of tuition is required. The exact dates will be posted at the College well in advance. Students who foresee the need of financial assistance should have submitted applications by these dates. Except under extreme and unusual emergencies, applications which fail to meet the deadline will be held for review until the next posted date.

The College of Medicine Alumni Association Student Loan and Scholarship Fund.—On July 15, 1958, a fund was established by the University of Nebraska College of Medicine Alumni Association and placed in the custody of the University of Nebraska Foundation to provide loans or scholarships to students registered or accepted for admission in the College of Medicine. Applications for loans on this fund are received by the Student Assistance Committee.

Students enrolled in the College of Medicine may also receive loans through the Nebraska Medical Foundation and the Nebraska Medical Education Fund, Inc. The Student Assistance Committee can supply information on either of these sources.

The Josephine Chamberlin Loan Fund.—On the retirement of Miss Josephine Chamberlin as Superintendent of the University of Nebraska Dispensary, on June 11, 1946, a fund was established in her honor. Loans from this fund are available to students of the College of Medicine and the School of Nursing.

The Faculty Woman's Club of the University of Nebraska College of Medicine Student Loan Fund.—This fund was established in 1956. Money is assigned to it from operation of the student exchange shop. The fund is administered by the University of Nebraska Foundation under conditions which apply to loans from other funds.

Kellogg Fund.—In April, 1942, the W. K. Kellogg Foundation of Battle Creek, Michigan, gave the College of Medicine \$10,000 to be used as a student loan fund, particularly to meet the emergency created by the accelerated war schedule and the consequent loss of student earnings during the summer. An additional grant of \$5,000 was made later in the year.

Omaha Medical College Foundation.—This foundation, created in April, 1921, was established largely through contributions received from former professors in the Omaha Medical College. The object of the foundation is to promote the study of medicine and to provide for medical research in the University of Nebraska College of Medicine and to assist worthy students with loans.

Lizzie Oltmans and Frederick Oltmans Student Loan Fund.—In March, 1950, the donors named above gave \$1,000 to the University of Nebraska Foundation to be used as a loan fund for undergraduate and graduate students enrolled in the College of Medicine.

Robert H. Storz Student Loan Fund.—This fund was established by Storz Brewing Company in 1952 with a sum of \$1,500 to be paid to the University of Nebraska annually. The fund was established to provide loans to students in the College of Medicine who are in need of assistance.

Dr. Carl P. Wagner Memorial Medical Student Loan Fund.—The sum of \$500 was given to the University of Nebraska Foundation in 1952. This fund was established to provide loans to students in the College of Medicine adjudged to be worthy and in need of assistance.

Scottish Rite Loan Fund.—A fund has been established with the University of Nebraska Foundation from which needy medical students may borrow up to \$400 per academic year. Application should be made through the Student Assistance Committee.

Nebraska Medical Education Fund, Inc.—A group of local physicians and alumni of the University of Nebraska College of Medicine has established a fund to assist medical students, nursing students, interns, and residents. Students in need of assistance may borrow up to \$1,500 per academic year from this fund. Application should be made to the Student Assistance Committee at the College of Medicine.

AWARD



University of Nebraska College of Medicine Alumni Association Award.—An award of \$50 is given each year to the senior student presenting the best thesis as judged by the Thesis Committee.

STUDENT AND ALUMNI ORGANIZATIONS



Student Activities Council.—The Student Activities Council governs the organization and regulation of student activities of the College of Medi-

cine and School of Nursing. It serves as an agency through which faculty relationships with student activity can be fostered and maintained. Recognized student groups elect members who serve as representatives in the Student Activities Council.

Alumni Association.—Alumni of the University of Nebraska College of Medicine maintain an active organization with headquarters in Omaha, at the college. Activities include sponsorship of class reunions, luncheons, dinners and the traditional senior reception following Commencement each year. A monthly news bulletin is sent to members.

The alumni of the medical college offer a prize of \$50 for the senior thesis of the year judged best by the Thesis Committee.

Alpha Omega Alpha.—A.O.A. is a nonsecret medical college honorary society, membership in which is based upon scholarship and moral qualifications.

Elections are made from the students who have completed nine or more quarters of the four-year medical curriculum and are made by unanimous vote of the active members of the chapter. Not more than one-sixth of any class may be elected to membership. The University of Nebraska Chapter was organized November 2, 1914.

Student American Medical Association.—Founded in 1950 with the aid of a grant from the AMA, the Student American Medical Association swiftly grew to its present membership of over twenty thousand students, representing sixty-nine medical schools. Serving expressly "to advance the profession of medicine, to contribute to the welfare and education of medical students, to familiarize its members with the purposes and ideals of organized medicine, and to prepare its members to meet the social, moral, and ethical obligations of the medical profession," SAMA offers group insurance plans, an internship evaluation program and a monthly Journal. Plans for the immediate future include low-interest student loans, new scholarships and a job placement service.

At Nebraska, among other functions SAMA jointly sponsors "Pre-Med Day" and a series of convocations held regularly throughout the school year. Membership closely approaches one hundred per cent of the student body.

SCHOOL OF NURSING



The School of Nursing, which is a part of the College of Medicine, affords three years of professional education following one year of liberal arts in an accredited college. The immediate administration of the School of Nursing is provided through the director and the faculty. The program of instruction is given by the faculties of the University of Nebraska which include the College of Arts and Sciences, the College of Medicine, and the School of Nursing. Students are admitted as candidates for the degree of Bachelor of Science in Nursing. The School of Nursing Building on the College of Medicine campus provides residence and educational facilities for the student nurses. Requests for bulletins and application blanks should be made to the Director, School of Nursing.

MEDICAL CURRICULUM



Departmental Hours.—The course of study outlined is constructed in accordance with the recommendations of the Council on Medical Education and Hospitals of the American Medical Association and of the Asso-

ciation of American Medical Colleges. The University Hospital and Dispensary on the Medical College campus furnish ideal opportunities for bedside clinical instruction in close relation to the scientific departments of the college.

CLINICAL FACILITIES



University Hospital.—The University Hospital forms the largest unit of the group of buildings constituting the College of Medicine. It is the center around which all the activities of the various departments are grouped, making possible a close correlation between clinical and laboratory teaching. The hospital, modern in every respect, contains floor space for 202 beds, and provides for the care of a wide variety of cases.

Patients are received from the several counties of Nebraska and are admitted on the application of a legally qualified practitioner of medicine and the chairman of the county board.

The recently completed addition to University Hospital places all patient services within one building. Visitors and patients enter the west door, and, from the lobby, are directed to the area they wish to visit. Hospital business offices and the dispensary are adjacent to this lobby.

College offices are on level 3, above the lobby. The library reading room is on level 4, near the center of the building. Patient wards, operating rooms, service functions and clinical departmental offices occupy the remainder of the building.

The control of the University Hospital rests in the Board of Regents and is administered by the College of Medicine.

University Dispensary.—The dispensary is located in the new addition. Separate services, each having its own rooms and equipment, are provided in: dermatology; eye, ear, nose and throat; genito-urinary diseases; gynecology; internal medicine; neurology; obstetrics; orthopedic surgery; pediatrics; surgery; and urology. These activities furnish a wide diversity of diseases and are organized for the teaching of the senior students, under the supervision of the clinical staff.

Extramural Hospitals.—Bishop Clarkson Memorial, Children's Memorial, Lutheran, Immanuel Deaconess, Nebraska Methodist, Hattie B. Munroe Convalescent Home, Douglas County, and Veterans hospitals in Omaha, and Bryan Memorial and Lincoln General hospitals in Lincoln, are available for regular or special clinics as needed. Clinics in psychiatry are provided at the Nebraska Psychiatric Institute. Members of the University faculty are on the staffs of all these hospitals.

Hospital Appointments.—Graduates of the College of Medicine are afforded a wide choice in the selection of internships. Twelve internships and thirty-four residencies in the major specialties are available at the University Hospital.

Medical Social Service Department.—The Medical Social Service Department provides a service to the patient and to the doctor. It interprets the medical findings and recommendations to the patient and his family and gives to the doctor information regarding the economic, social, and cultural problems of the patient. This information gives the doctor a better understanding of the patient and enables him to better evaluate the patient's ability to carry out his orders.

LABORATORY FACILITIES



Anatomy.—The Department of Anatomy occupies the third and fourth floors of the North Laboratory Building. The rooms are well lighted and ventilated. The "unit room" system—each unit accommodating four or eight students—has been adopted as superior to that of a large common dissecting room. The state anatomical law provides ample material for dissection. In the laboratory for microscopic anatomy, individual desks, lockers, reagents, etc., are at the student's disposal, as are also excellent collections of histological and embryological material, models, charts, etc.

Biochemistry.—This department is located in South Building and occupies levels two and three which have been completely renovated recently into modern air-conditioned laboratories and offices. Level two is devoted exclusively to a student laboratory and supporting facilities for medical biochemistry. The student laboratory can accommodate over 100 students and is subdivided into five independent sections, an arrangement which avoids the turmoil of the large laboratory and allows for small-group teaching and a research-oriented laboratory curriculum.

Level three houses offices, research laboratories, and supporting facilities for faculty. Each faculty member occupies an office-laboratory suite. Additional research laboratories for graduate and special students are available, together with laboratories for studies with radioisotopes and other special instrumentation. Supporting facilities include a cold room, walk-in incubator, darkrooms, shop, glass-washing facility, storage areas, and library-conference room. The department possesses all of the modern tools for biochemical research and pursues an active research program.

Animal research quarters for the department are located in the penthouse of South Building and in the nearby Memorial Research Laboratory building.

Microbiology.—Occupying the first and second floors of the North Laboratory Building, this department uses the same student laboratory as Pathology. There are excellent facilities for support of the teaching exercises and for support of an active research program being carried out. The diagnostic work for the University Hospital provides material useful in the class exercises. An extensive collection of color lantern slides, mounted specimens, and charts is available for the teaching exercises.

Pathology.—The office and classroom area is principally on the second floor of the North Laboratory Building. The student laboratory is utilized also by Microbiology. Equipment, loan sets of slides, and apparatus, with the exception of microscopes, are provided for the student. Approximately 8,500 color lantern slides are used for the teaching exercises. The Pathologic Anatomy and Clinical Pathology laboratories of the University Hospital provide material and support the teaching program.

Physiology and Pharmacology.—Experimental physiology and pharmacology occupies the fourth, fifth, and sixth floors of the South Laboratory Building. Laboratory exercises of the medical students are carried out on part of the fourth floor, and research work for graduate students in the remainder of the space. The main laboratories accommodate forty-four students in each section, with separate tables and lockers for each group of students. In a separate mammalian laboratory students work in groups of five.

There are special rooms for specialized research instruments, including space provided for an ultracentrifuge and for spectrophotometric work. The laboratory is fully equipped with electronic equipment for research and electrophysiology, including electromyography, electrocardiology and electroencephalography. There is advanced equipment for research in endocrinology such as refrigerated centrifuges, counter current, and gas chromatography apparatus. Cold rooms are provided. In addition there is a well-equipped workshop for the construction and repair of a wide variety of apparatus.

Museum.—The pathological museum of the College of Medicine contains about 3,500 specimens. Nearly every variety of pathological lesion is represented and the constant addition of fresh material from the autopsies performed continually adds to its interest. In addition to the gross specimens are thousands of microscopic sections and a large collection of wax reproductions of various lesions. The museum is an important and necessary adjunct to the teaching of pathology and of clinical medicine.

Clinical Pathology.—For clinical clerk service a central hospital laboratory is provided in which clinical laboratory work on assigned cases is done under supervision. For tissue examination, a special laboratory is located on the ground floor of the first hospital unit, with necropsy room adjacent.

LIBRARY FACILITIES



The college library is located in the Hospital building within easy access of the various laboratories and stands as a vital common interest to the laboratory and clinical branches of medical instruction. The reading room, seating eighty, furnishes a congenial place for students, faculty and staff to work. Half of the 1,200 current journals received are shelved in this room. The book stacks are directly below on two levels and contain 150,000 bound volumes, theses, and monographs. This collection is the result of purchases and acquisitions extending over more than half a century, building up complete files of important journals in the fields of clinical medicine and the basic sciences in English and foreign languages as well. Here the student has access to one of the most complete medical libraries in the Midwest, which offers abundant opportunities for research and additional reading and study. First year students are given instruction in the use of the library, including an introduction to all the important medical reference tools and indexes.

Incident to its ordinary function, the library maintains a collection of material on the history of medicine in Nebraska, graduates of the College, activities of its staff, and keeps a complete file of reprints of the writings of staff members. Incorporated within the library of the College of Medicine are 2,000 volumes of the Omaha-Douglas County Medical Society, periodicals and transactions of the Nebraska State Medical Association, and several outstanding private medical libraries of former practitioners of the state.

The resources of the University of Nebraska Libraries in Lincoln are available to students and faculty in Omaha, putting an additional half million volumes at their disposal. Through close cooperation with other medical libraries it is possible for the Librarian to secure inter-library loan material from other libraries, including the Midwest Inter-Library Center in Chicago and the National Library of Medicine in Washington.

SUMMARY OF DEPARTMENTAL HOURS

	Clock Hours	◇ ◇ Total Clock Hours
ANATOMY		624
310 Gross Anatomy	312	
311 Embryology-Histology	212	
312 Neuro-Anatomy	100	
BIOCHEMISTRY		276
310 Medical Biochemistry	264	
340 Clinical Biochemistry	12	
CORRELATION COURSES		64
310 First Year Correlation Course	36	
320 Introduction to Clinical Medicine	12	
330 Medical-Surgical Conference	8	
340 Medical Therapeutics	8	
DERMATOLOGY		28
330 Fundamentals	12	
341 Dispensary	16	
INTERNAL MEDICINE		828
320 History Taking and Physical Diagnosis.....	108	
Clinical Correlation, Sophomores		
330 Principles of Internal Medicine	454	
340 Clinical Clerkship	266	
MEDICAL ETHICS		12
340 Medical Ethics and Professional Relationships	12	
MEDICAL JURISPRUDENCE		16
340 Medical Jurisprudence	16	
MEDICAL MICROBIOLOGY		252
320 Medical Bacteriology and Clinical Parasitology.....	252	
NEUROLOGY AND PSYCHIATRY		342
310 Normal Personality Development.....	24	
320 Basic Psychiatry	36	
321 Neurology	12	
331 Neurology	12	
335 Clinical Clerkship	104	
340 Neuropsychiatric Demonstrations	4	
341 Senior Clerkship	120	
342 Dispensary	30	
OBSTETRICS AND GYNECOLOGY		404
320 Introduction to Obstetrics and Gynecology.....	16	
330 Obstetrics and Gynecology	40	
335 Clinical Clerkship	112	
340 Obstetrics and Gynecology	12	
341 Senior Hospital Clerkship.....	224	
OPHTHALMOLOGY		89
320 Medical Ophthalmology	17	
335 Clinical Clerkship	24	
340 Dispensary	48	
ORTHOPEDIC SURGERY		44
330 Fractures, Dislocations and Sprains.....	12	
340 Diseases of Bones and Joints.....	16	
342 Fractures, Dislocations and Sprains.....	16	
OTORHINOLARYNGOLOGY		40
330 Diseases of Ear, Nose, Throat and Larynx.....	16	
Ward Clinic	12	
340 Dispensary	12	
PATHOLOGY		550
321 General Pathology	275	
322 Clinical Pathology	60	
331 Clinical Pathology	75	
332 Clinical Pathology Conference.....	24	
333 Correlative Clinical Pathology.....	36	
340 Clinical Pathology Conference.....	40	
341 Correlative Clinical Pathology	40	

SUMMARY OF DEPARTMENTAL HOURS

	Clock Hours	Total Clock Hours
PEDIATRICS		432
320 Growth and Development.....	16	
330 Diseases of Childhood.....	40	
335 Clinical Clerkship	88	
340 Hospital Clinic	18	
341 Dispensary	90	
342 Senior Clerkship	180	
PHYSICAL MEDICINE AND REHABILITATION		32
330 Principles of Rehabilitation Medicine.....	16	
340 Senior Clinical Clerkship	16	
PHYSIOLOGY AND PHARMACOLOGY		540
310 General Introductory Course.....	72	
311 Laboratory Course	84	
322 Lectures and Demonstrations	84	
323 Laboratory Course	84	
324 Lectures and Demonstrations	84	
325 Laboratory Course	84	
326 Physiology of the Eye and Ear	24	
327 Physiology of the Eye and Ear Laboratory	24	
PREVENTIVE MEDICINE		103
310 Accident Problems and Field Emergency Care.....	16	
320 Principles of Preventive Medicine.....	28	
321 Principles of Preventive Medicine.....	24	
330 Clerkship in Preventive Medicine	35	
RADIOLOGY		76
Radiological Anatomy (included in Gross Anat.)		
320 Principles of Radiology.....	12	
330 Principles of Radiology	28	
331 Clinical Radiology	16	
341 Radiologic Conference and Clinic	20	
SURGERY		802
Sophomore Clinical Correl. (jointly with Int. Med.)		
330 Fundamentals of Surgery.....	68	
335 Clinical Clerkship	360	
340 Neuro-Surgery	12	
341 Senior Clinical Clerkship	210	
343 Dispensary	140	
347 Anesthesiology	12	
UROLOGY		28
330 Fundamentals of Urology.....	16	
Ward Clinics (included in Surgery Clk.)		
341 Dispensary	12	
		5582
Freshman Year	1120	
Sophomore Year	1252	
Junior Year	1608	
Senior Year	1602	

Courses of Instruction

In the following departments, courses numbered 310-319 are given in the first medical year; courses numbered 320-329, in the second medical year; courses numbered 330-339, in the third medical year; courses numbered 340-349, in the fourth medical year. Courses numbered 350 carry graduate credit. Roman I indicates courses offered the fall quarter; II, the winter quarter; III, the spring quarter; and SS, the summer.

Anatomy

Professors Holyoke, *Chairman*, Latta; Associate Professors Benjamin, Elliott; Assistant Professors Bach, R. R. Best, Pederson, Reynolds; Instructor Cochran; Demonstrators Coe, Rath, Rees.

In this department instruction is given in gross, microscopic, and developmental anatomy including gross and microscopic anatomy of the nervous system. The work of the department extends through the first two quarters of the first medical year.

All instruction is based on laboratory work carried out under the supervision of the staff. Lectures covering subjects of broad morphological significance are given before the entire class, but for the discussion of details, in conjunction with laboratory work, the class is subdivided into small groups. Every effort is made to correlate the work in gross and microscopic anatomy. A comprehensive examination covering all phases of anatomy is given at the end of the second quarter.

Anatomy.—

310. Gross Anatomy (Total 312 hrs I, II)

The course covers dissection of the entire body. This work is carried out in groups of four to six, each group being assigned a separate room. From time to time table demonstrations and quizzes are required. Through this table teaching the student's proficiency is increased and calibration of individual progress is made possible. (240 hrs or 10 qtr hrs credit for graduate work.)

311. Embryology-Histology (Total 212 hrs I, II)

A brief survey of the fundamental facts of vertebrate development as based on chick, pig and human embryos is first undertaken. This is followed by a study of the histogenesis of the fundamental tissues leading directly to their adult histological structure. Morphogenesis and histogenesis of the various organ systems of the body, excepting the nervous system which is studied independently, are similarly correlated with their adult histological and gross structure and with the relationships shown in gross anatomy. Special emphasis is placed on the study of the blood and blood-forming organs and the organs classified as endocrine which are studied somewhat independently. (200 hrs or 9 qtr hrs credit for graduate work.)

312. Neuro-Anatomy (Total 100 hrs II)

Lecture and laboratory

The gross and microscopic anatomy of the nervous system including sense organs. Study is made of the human brain by means of gross dissection; gross and microscopic sections; gross and microscopic study of the eye, and other sense organs by specially prepared demonstrations. Text and lectures aim to integrate the details of laboratory study into functional systems applicable to later physiological and clinical studies. (80 hrs or 7 qtr hrs credit for graduate work.)

350. General and Special Methods in Histological Technique (3-8 qtr hrs) Elliott, Latta, Holyoke

Prereq Anat 310-314

Principles and practice in general methods of preparation of tissue for histological study; special training given in the field of the student's particular interest.

351. Special Neurohistological and Experimental Neurological Techniques (3-8 qtr hrs) Elliott, Latta

Prereq Anat 350

Advanced special technical methods of demonstrating the histological structure of nervous tissue and of the experimental approaches to neurological problems.

352. Techniques of Histochemistry (3-8 qtr hrs) Jacobi, Latta

Prereq Anat 350

Development of methods for demonstrating various chemical features in tissues of the body.

353. Morphological and Experimental Hematology (4-9 qtr hrs) Holyoke, Latta

Prereq Anat 350

Detailed study of the morphology and inter-relationships between the cells of the blood, blood-forming organs and the connective tissues. Experimental studies of the biological significance of the cellular elements of the blood.

354. **Comparative Human Embryology** (4-9 qtr hrs) Benjamin, Latta, Pederson
Prereq Anat 350
 Special advanced studies of various features of reproduction and development as illustrated in the departmental and embryological collection.
355. **Experimental Embryology** (4-9 qtr hrs) Holyoke, Latta
Prereq Anat 350
 Advanced study and training in the methods employed in analysis of the factors and potentials operative in mammalian development processes.
356. **Advanced Human and Comparative Neuroanatomy and Neurohistology** (4-9 qtr hrs) Benjamin, Elliott
Prereq Anat 350
 Advanced detailed study of the structural organization of the central and peripheral nervous system of a man and/or various laboratory animals.
357. **Morphological Endocrinology** (4-9 qtr hrs) Holyoke, Latta, Pederson
Prereq Anat 350
 Advanced study of histological features of the various endocrine glands and morphological effects of endocrine substances on various target organs.
358. **Biology of Radiation** (4-9 qtr hrs) Holyoke, Latta, Pederson
Prereq Anat 350
 Morphological alterations induced in the living organism by radioactive substances.
359. **Thesis Research** (cr arranged) Staff
 Independent investigation of some problem chosen by consultation between student and the staff.
360. **Seminar** (1 cr per qtr) Staff
 By permission
 Presentation of problems and accomplishments of investigations conducted by the graduate students and members of the department with critical discussion.
361. **Advanced Gross Anatomy** (3-10 qtr hrs) Holyoke, Pederson
Prereq Anat 310, 311, 312
 Studies of general and special gross dissection of the human body.
362. **Techniques of Electron Microscopy** (5 qtr hrs) Latta
 Instruction in the general theory, and practice in the operation of the electron microscope, including special methods involved in the fixation, embedding, sectioning and mounting of specimens.
363. **Selected Problems in Electron Microscopy** (5-10 qtr hrs) Holyoke, Latta
Prereq Anat 362
 Special problems will be selected involving the ultrastructure of organelles within cells, of plasma membranes, interrelationships between cells or the characteristics of intercellular substances as revealed by the electron microscope.

Biochemistry

Professors Jacobi, *Chairman*, Harman; Associate Professors Beber, Carver, Davis, Wilder; Assistant Professors Barak, A. L. Dunn, Kadis, Ng.

The courses in Biochemistry 310 and 340 aim to acquaint students with the basic facts of the science, particularly as these relate to an understanding of disease states. Moreover, biochemical aberrations in disease states are introduced to aid in the understanding of normal reactions and mechanisms.

The instruction offered in these courses is supplemented with more advanced and specialized courses (350-371, inclusive) for students who are candidates for the M.S. or Ph.D. degree; and for other students, such as hospital residents, desiring advanced training in medical biochemistry independently of the requirements for a degree.

310. **Medical Biochemistry** (Total 264 hrs II, III) (14 qtr hrs credit for graduate work except for those completing a graduate major in biochemistry.) Jacobi and Staff
 The descriptive and dynamic aspects of biochemistry with special reference to the human are presented. Physico-chemical principles are reviewed and applied to understanding normal physiological processes and their derangements in disease. Lipids, carbohydrates and proteins are discussed from the standpoints of descriptive chemistry, digestion, absorption, intermediary metabolism and of their relationships in metabolism and nutrition. Principles of biochemistry as they relate to clinical medicine are further considered in discussions of blood and other body fluids and tissues; urine; water, electrolyte, and acid-base balance; mineral metabolism; enzymes; vitamins; and of hormones. The laboratory work is illustrative of the problems and methods discussed, and the experi-

ments performed by the students constitute an important and integral part of the course in medical biochemistry.

- 331. Bio-Medical Measurements** (Internal Medicine 331, Physiology and Pharmacology 331) (May carry graduate cr up to 5 qtr hrs or 3 sem hrs for students who are candidates for the M.S. degree with a major in a physical science or in engineering) Bennett, Dunn, Grissom, Jacobi, McIntyre, and Staff
By permission: Lectures and lecture conference and demonstrations: The course aims to utilize the training of the student in physics, mathematics, and electronics for a direct approach to cellular physiology and chemistry for the purpose of study of methods of measurement with emphasis upon electronic techniques.
- 340. Clinical Biochemistry** (12 hrs III) Harman
Although this course deals with clinical problems, it is presented against a background of basic biochemistry. The content varies, depending on topics of current interest as well as on student needs. Such subjects as acid-base balance, water and electrolytic metabolism, protein metabolism and antibiotics have been covered. The biochemical aspects of these topics are emphasized in extensive correlation with clinical material. In this way the biochemistry of clinical medicine is brought into sharp focus.
- 350. Biochemistry of Disease** (3-9 qtr hrs) Harman, Beber, Jacobi
Prereq Biochem 310
This course consists of the systematic presentation of the biochemical aspects of various diseases. Biochemical principles and facts are studied and utilized in a detailed manner in connection with the pathogenesis, course, and treatment of disease.
- 351. Vitamins and Nutrition** (3-9 qtr hrs) Wilder
Prereq Biochem 310
Each of the vitamins is considered from the standpoints of history, chemistry, determination, physiological function, and requirements. Nutritional aspects of proteins, carbohydrates, lipids, and essential mineral elements are reviewed and integrated with the study of vitamins.
- 352. Enzymes** (3-9 qtr hrs) Barak
Prereq Biochem 310
This course deals with the chemical nature of enzymes, the methods for their isolation, the kinetics of enzyme reactions, and the physiological function of enzymes. The clinical significance of certain of the enzymes is considered.
- 353. Hormones** (3-9 qtr hrs) Wilder
Prereq Biochem 310
Hormones are discussed from the standpoints of chemical nature, isolation, determination and function. The hormonal control of metabolism and the relationship of hormones to enzymes and vitamins are emphasized.
- 354. Intermediary Metabolism** (3-9 qtr hrs) Jacobi
Prereq Biochem 310
The chemical reactions involved in the anabolism, catabolism, transformations and interconversions of proteins, lipids, and carbohydrates are presented in detail.
- 355. Water, Electrolyte, and Acid-Base Balance** (3-9 qtr hrs) C. R. Angle, Jacobi
Prereq Biochem 310
This course is an advanced study of the chemical structure and volume of the various body fluids and the mechanisms whereby they are formed and maintained within normal limits. Deviations in various pathological conditions are interpreted in terms of normal mechanisms.
- 356. Advanced Biochemical Techniques** (3-9 qtr hrs) Staff
Prereq Biochem 310
Instruction in advanced biochemical techniques including paper and solution electrophoresis, spectrophotometry, Warburg manometry, paper chromatography, ultracentrifugation and special chemical determinations.
- 357. Histochemistry** (3-9 qtr hrs) Carver, Latta
Prereq Biochem 310
The histochemistry of proteins, lipids, carbohydrates, enzymes, and other biologically important compounds will be reviewed with emphasis on the chemistry of the staining techniques. The application of histochemistry to physiological and pathological problems will be described.
- 358. Radioactive Tracers in Biochemistry** (3-9 qtr hrs) Dunn
Prereq Biochem 310
The employment of radioisotopes as a research tool in biochemistry will be presented. The theoretical and practical aspects of isotope methodology and the ap-

plication of this technique to the solution of biochemical problems will be emphasized.

359. **Proteins** (3-9 qtr hrs) Barak, Carver
Prereq Biochem 310
This course consists of a survey of the chemistry and biology of proteins and the products of their hydrolysis. Descriptive chemistry, methods of isolation, techniques for characterization and biological significance of proteins and amino acids will be considered.
360. **Physical Biochemistry** (3-9 qtr hrs) Davis, Ng
Prereq Biochem 310 and Chem 217 or equivalent
Purely physical phenomena will be reviewed and applied to the interpretation of biological systems. In particular, the course will emphasize the view that colloidal phenomena are concerned in the functioning of all living systems. Colloidal aspects of proteins, lipids, carbohydrates, blood, bone, muscle, nerve, etc., will be scrutinized.
361. **Lipids** (3-9 qtr hrs) Davis, Ng
Prereq Biochem 310
Studies of chemical and physical properties of lipids; methods for isolation and analysis; physiology and metabolism; role of lipids in biological structure; and clinical applications involving lipid metabolism are presented.
362. **Endocrinology of the Sex Hormones** (Obstetrics and Gynecology 355) (3-5 qtr hrs) Wilder
Prereq Biochem 310 or equivalent
Designed to acquaint the student with the chemistry and metabolism of the estrogens, androgens, progestational substances and gonadotropins. As needed, essential information on adrenal hormones will be included.
363. **Topics in Advanced Organic Chemistry** Kadis, Ng, Harman
A. **Chemical Bonding and Molecular Structure** (3 qtr hr cr)
B. **Organic Reaction Mechanisms** (3 qtr hr cr)
C. **Qualitative Organic Analysis** (3 qtr hr cr)
364. **Neurochemistry** (Neurology and Psychiatry 358) (3-9 qtr hr cr) Carver
A basic course in particular aspects of the chemistry of the central nervous system. The material will cover survey lectures of the anatomy of the brain, followed by discussions of subcellular units, metabolic compartments, the regional distribution of chemical components, regional nutrition and metabolism, axonal flow and neurosecretion, biogenic amines, chemistry and function of neural units, and the biochemistry of convulsive disorders.
365. **Advanced Topics in Biochemistry** (1-15 qtr hr cr) Staff
Advanced study or research in biochemistry other than thesis.
370. **Seminar** (cr arr) Staff
371. **Research** (cr arr) Staff

Correlation Courses

310. **First Year Correlation Course (I, II, III)**
Clinical patients and problems are presented by clinical staff members to illustrate the application of basic science course content to medical problems and practice.
320. **Introduction to Clinical Medicine (III)**
An introduction to clinical medicine for sophomores is held weekly, jointly with the Department of Surgery. A member of each department is present and they jointly discuss such subjects as Ageing and Involution, Diseases of Medical Progress, Shock, Fever and Reaction to Injury and Stress.
330. **Medical Surgical Conference**
A combined medical-surgical conference is held once each month, at which staff members of both departments discuss patients and their diagnosis and care. This conference is directed to both undergraduate and postgraduate students and is attended by junior students, senior students and the faculties of the Departments of Surgery and Medicine. Physicians in practice are cordially invited to attend.
340. **Medical Therapeutics**
This is a seminar-type conference for students in small groups, held jointly by the Department of Medicine and the Department of Physiology-Pharmacology. Students report in pairs on the backgrounds of several types of diseases and discuss the rationale of treatment with specific drugs.

Dermatology and Syphilology

Professors Cameron, *Chairman*; D. Wilson; Associate Professor Pinne; Clinical Instructors Barthell, Bell.

A foundation in dermatology and syphilology is laid by lectures, clinics and demonstrations. At the University Dispensary the students are brought in personal contact with patients whom they observe throughout their entire care under the supervision of the attending physician. A large and carefully selected collection of plates and photographs is available for lantern use.

Dermatology.—

- 330. Fundamentals** (1 hr weekly, total 12 hrs I) Cameron, Pinne
Lectures on the skin and its diseases; syphilis.
- 341. Dispensary** (2 hrs weekly, for 8 wks, total 16 hrs SS, I, II, III)
Weekly 2-hour clinics are held at the University Dispensary.
Fourth-year students are assigned to these clinics for practical experience in the diagnosis of skin diseases and the treatment of syphilis.

Internal Medicine

Professors Grissom, *Chairman*, Beber, F. L. Dunn, Lehnhoff, Lemon; Associate Professors Angle, Brazer, Greene, Holthaus, Hubbard, Kirk, Long, Loomis, Pepper; Clinical Associate Professor Reed; Assistant Professors Bucholz, Fleishman, Graham, Hankins, Harmon, Henn, Knott, Langdon, Lewis, Morris, Nutzman, Ogborn, Paustian, Pratt, Root, Wright, Wurl, Wyrens; Clinical Assistant Professor Youngman; Associates Dickerson, Freed, Jackson, Joranson, Knott, MacQuiddy, Jr., Magnuson, Parrillo, Rosenlof, White; Clinical Associate Thompson; Instructors Albertson, Avert, Biggs, Jr., Bressman, Byrne, Cuddington, Davis, Dewey, Edwards, Forrest, Graves, Holcombe, Holdgraf, Krush, Lee, Meiberger, Millett, Niehaus, Picket, Schellak, Slabaugh, Walvoord; Clinical Instructors Maxwell, Stemper, Taylor, Whitlock, Williams; Assistant Instructors Duffy, Olnhausen, Stryker, Weeks; Clinical Assistant Aziz; Senior Consultants Anderson, Best, Hull, MacQuiddy, Sr., McCarthy, Margolin, Moody, Muskin, Niehaus; Emeritus Bresnahan, Covey.

It is the aim of instruction in Internal Medicine to establish a broad understanding of patients with disease and to develop a scholarly approach to the study of medical problems. Intensive study by each student of relatively fewer patients is emphasized rather than superficial observation of many patients. The student studies health as well as disease. Small group conferences (four to six students) are utilized, with each member of the group participating. Time is allowed in each weekly program for reading, research, and other independent pursuits for the purpose of establishing habits for self-development which will persist for life.

Internal Medicine.—

- 320. History-Taking and Physical Diagnosis** (1 hr lecture demonstration, 2 hrs practical, weekly. Total 108 hrs I, II, III)
Instruction in history-taking and the performance of the complete physical examination. Special methods of examination are taught by members of other departments. Students are assigned in groups of six to each instructor.
- 330. Principles of Internal Medicine** (Total 454 hrs I, II, III)
The lectures (68) are designed to acquaint the students with fundamental problems encountered in medical practice and to supplement bedside learning. Students are assigned to the University Hospital, the Omaha Veterans Hospital, and the Immanuel Hospital for a period of eight weeks, where they take histories, do physical examinations and perform designated laboratory tests. For an additional eight weeks shared longitudinally with neuropsychiatry the students have small-group instruction in nutrition, hematology, radioisotopes, tuberculosis, rheumatology, cardiology, and allergy.
Grand Rounds at the University of Nebraska Hospital and the Veterans Administration Hospital are held weekly throughout the year and attended by all those assigned to Internal Medicine services. In addition, a combined medical-surgical conference is held once monthly.
- 340. Clinical Clerkship** (Total 266 hrs I, II, III)
Experience in general and specialty medicine is obtained in 4 weeks shared with the Departments of Neurology and Psychiatry and Dermatology and Syphilology. The cooperating hospitals are the Bishop Clarkson Memorial Hospital, the Douglas County Hospital, Immanuel Hospital and the University of Nebraska Hospital. A lecture-clinic course is given one hour weekly throughout the year.

General Exercises. (Total hours—see Correlation Courses)

An introduction to Clinical Medicine for sophomores is held weekly, jointly with the Department of Surgery. A member of each department is present and jointly discusses such subjects as aging and involution, diseases of medical progress, shock, fever, reaction to injury and stress.

Internal Medicine Electives.—

341. (SS, I, II, III)
A dispensary service in Medicine general and specialty clinics. This may be combined with Radiology or with thesis research or with Neuro-Psychiatry and Dermatology.
342. (SS, I, II, III)
A full-time, 4-week, in-patient clerkship in any of the cooperating hospitals: Bishop Clarkson Memorial, Bryan Memorial, Douglas County, Immanuel, Lincoln General, Methodist, or the University of Nebraska Hospital.
343. (I, II, III)
Subspecialty electives. Limit of two students per subspecialty elective at any one time.
a Cardiovascular Disease
b Metabolic and Endocrine Diseases
c Gastrointestinal Disease
d Hematology
e Medical Electronics
f Oncology
349. (SS, I, II, III)
Research
350. **The Physiology of Symptoms** (1 qtr hr cr per qtr—total 3) Grissom
351. **Problems in Metabolism and Endocrinology.** Grissom, Henn
a. **Diabetes Mellitus** (1 qtr hr cr per qtr—total 3)
b. **Advanced Endocrinology** (1 qtr hr cr per qtr—total 3)
c. **Metabolism and Nutrition** (1 qtr hr cr per qtr—total 3)
d. **Rheumatology** (1 qtr hr cr per qtr—total 3)
352. **Advanced Gastroenterology and Biliary Diseases** (1 qtr hr cr per qtr—total 3) Paustian
353. **Advanced Studies of the Cardiovascular Renal System**—Angle, Dunn, Grissom, Hubbard, Pepper
a. **Cardiologic Diagnosis and Electrocardiography** (4 qtr hr cr per qtr—total 12)
b. **The Management of Heart Disease** (3 qtr hr cr per qtr—total 9)
c. **Hypertension and Nephritis** (3 qtr hr cr per qtr—total 9)
d. **Peripheral Vascular Diseases** (1 qtr hr cr per qtr—total 3)
354. **Infectious Diseases, Chemotherapy, and Antibiotics** (3 qtr hr cr per qtr—total 9) Grissom, Langdon, Loomis
355. **Advanced Allergy** (1 qtr hr cr per qtr—total 4) Hull
356. **Advanced Hematology** (1 qtr hr cr per qtr—total 4) Pratt
360. **Research** (cr arr) Staff

Medical Ethics

Lecturers, F. C. Coleman, D. Jackson, R. K. Kirkman, J. D. McCarthy, L. S. McGoggin, K. Neff, E. A. Rogers, R. F. Sievers, J. P. Tollman.

These selected physicians and laymen present pertinent facts and considerations relating to the economics, the organization, the types of practice and the obligations of physicians to patients, to their community and to their fellow physicians.

340. **Medical Ethics and Professional Relationships** (12 hrs I, II)

Medical Bibliography

Librarian Hetzner; Assistant Librarian Koenig and Staff.

Lectures and conferences are held to acquaint the student with resources in medical literature and bibliographic methods in medical research.

First year students are given instruction regarding the use of reference and indexing tools and receive practical experience in the application of literature-searching technics. Advanced students may receive instruction and arrange conferences on the bibliography of science and the problems involved in thesis writing.

Medical Jurisprudence

Associate Professor Ellick, *Chairman*; Instructor Gordon Ryan

The course in medical jurisprudence has for its purpose the presentation of medico-legal relationships in order that the student may be familiar with that increasingly pertinent phase of professional life and practice. This course is a comprehensive survey of the medico-legal field and a detailed analysis and study of that science which applies the principles and practice of medicine to the elucidation and settlement of legal questions which arise in everyday professional practice as well as in courts of law.

340. Medical Jurisprudence (16 hrs II, III)

Medical legislation, medical evidence and witnesses, privileged communications, general medico-legal relations, physicians' contracts and compensation, income taxes, malpractice, workmen's compensation law, sterilization and liability of hospitals and nurses are some of the subjects discussed.

Medical Microbiology

Professors McFadden, Jr., *Chairman*, Gunderson; Associate Professors N. G. Miller, von Riesen; Assistant Professors Tremaine, White; Research Associate H. Reihart.

It is the aim of this department to develop with the student the character and host relationships of disease-causing microorganisms. It is also our aim to consider the effect upon the human host of microbial agents and to suggest the manner in which a microbiological diagnosis may be made. This is done by lectures which emphasize host-parasite relationships. Immunity and associated phenomenon are discussed and laboratory exercises demonstrate the essential features of disease and resistance.

The course in Medical Microbiology 320 aims to acquaint students with the basic principles of microbiology, particularly as these relate to infection and disease. The instruction offered in this course is supplemented with more advanced and specialized courses (350 to 399 inclusive), for students who are candidates for the M.S. or Ph.D. degree and for other students such as honors students, residents in specialty training, and others desiring advanced work in medical microbiology independently of the requirements for a degree. For more details concerning the program in graduate education, please see the *Bulletin of the Graduate College of the University of Nebraska*.

Medical Microbiology.—

320. Medical Microbiology (Total 252 hrs I, II) McFadden and Staff

A lecture, conference, and laboratory course dealing with the cultural characteristics, pathogenic properties, immunological responses, host-parasite relationships, etc., of bacteria, fungi, rickettsias, and viruses in general, with special reference to those of importance in disease. This course also provides a consideration of clinical parasitology and deals with protozoa, helminths, and arthropods of medical importance.

350. Physiology of Microorganisms (4 qtr hr cr) von Riesen

Lect 2 lab 4. Prereq MM 320 and one semester organic chemistry (or biochemistry)

A consideration of the chemical composition, structure, growth, and nutrition of microorganisms; the influence of physical and chemical agents; and variation, adaptation, and mutation.

352. Metabolism of Microorganisms (4 qtr hr cr) von Riesen

Lect 2 lab 4. Prereq MM 350 and a course in biochemistry or by special permission

A study of enzymes; the metabolism of carbohydrates, proteins, and other substances; and virulence as a physiologic problem.

354. Principles of Immunology (6 qtr hr cr) Tremaine

Lect 3 lab 6. Prereq MM 320

Detailed study of the nature of antigens, antibodies, and their interactions. Laboratory work includes preparation of antisera, quantitative immuno-chemical methods, principles of serological tests, and study of *in vivo* allergic reactions.

356. Medical Bacteriology (8 qtr hr cr) Miller, Tremaine, White

Lect 2 lab 4. Prereq MM 320

A detailed study of the morphologic, cultural, antigenic and pathogenic characteristics of disease-producing bacteria including techniques of isolation and identification. This course is to be given over a period of two consecutive quarters.

358. **Systematic Microbiology** (3 qtr hr cr) Tremaine, White
Lect 3. *Prereq* MM 320
Study of the systematic relationships of microorganisms. Classification methods, nomenclature and relationships among bacteria, yeasts, molds, viruses, rickettsias, and protozoa are explored. Three discussions per week.
360. **Medical Mycology** (4 qtr hr cr) Miller
Lect 2 lab 4. *Prereq* MM 320
A study of the actinomycetes and fungi with particular emphasis on those capable of producing infection.
362. **Viruses and Rickettsia** (8 qtr hr cr) Reihart, White
Lect 2 lab 4. *Prereq* MM 320
A detailed study of the morphologic, physiochemical, cultural, and pathogenic characteristics of human and animal viruses and rickettsia with emphasis on methodology and host-parasite relationships. This course is to be given over a period of two consecutive quarters.
364. **Medical Parasitology and Tropical Medicine** (4 qtr hr cr) McFadden, Smith
Lect 2 lab 4. *Prereq* MM 320
A detailed study of protozoan and helminthic agents of disease including consideration of morphology, biology, life cycles, and host-parasite relationships.
370. **Diagnostic Microbiology** (3-9 qtr hr cr) McFadden and Staff
By arrangement. *Prereq* MM 320
Specific techniques for isolation, identification and sensitivity testing of microorganisms from clinical material available in the diagnostic laboratories of the University of Nebraska Hospital and Clinics. Practical approach with conference and laboratory.
A. **Bacteriology**
B. **Serology**
C. **Virology**
372. **Microbiology of Foods and Water** (4 qtr hr cr) Miller, von Riesen
Lect 2 lab 4. *Prereq* MM 320
A study of the microorganisms found in and on natural, fermented, and prepared foods, and in water and sewage; spoilage microorganisms; preservation of foods; standard methods for the analysis of foods and water; and the role of foods and water in the transmission of disease agents.
374. **Diseases of Animals Transmissible to Man** (3 qtr hr cr) McFadden, Miller
Lect 3. *Prereq* MM 320
A study of the epidemiological factors necessary for the transmission of various microbial diseases of animals to man including a discussion of the infecting agents, their vectors if any, their reservoirs and their interrelationships.
376. **Pathogenesis of Infectious Diseases** (3 qtr hr cr) McFadden
Lect 3. *Prereq* MM 320
Every pathogenic organism has its own unique, biological, and biochemical qualities which make possible invasion, multiplication, infection, and disease within the host. This course is concerned with these host-parasite relationships.
380. **Antiseptics, Disinfectants, and Chemotherapeutic Agents** (4 qtr hr cr) McFadden, von Riesen
Lect 2 lab 4. *Prereq* MM 320 and MM 350 or by special permission
Theoretical and practical aspects of the influence of physical and chemical agents on microorganisms.
382. **Advanced Topics in Microbiology** (cr arr) Staff
Prereq MM 320
Advanced study (research other than thesis) in one of the several disciplines of medical microbiology such as bacteriology, immunology, mycology, virology, parasitology, tissue culture, electron microscopy, etc.
- 398 (361). **Seminar** (1 qtr hr cr per qtr) Staff
By permission
- 399 (362). **Thesis Research** (cr arr) Staff

Neurology and Psychiatry

Professors Wittson, *Chairman*, M. Eaton, Hiskey, Krush, Osborn, Strough, Wigton; Associate Professors Affleck, Aita, Dundon, Dutch, Ellingson, Haworth, Helper, Starr, Wiley; Associate Research Professor Carver; Clinical Associate Professor Stein; Assistant Professors Bartholow, Eisen, Goldner, Kurtz, Lunde, Majka, Meile, Muffly, Ring, Scofield, Tunakan, J. Williams, M. Williams, Wolpin; Assistant Research Pro-

fessors McIntire, Schain; Associates Garetz, Gray, Ingham, Jones, Yager, Young; Instructors Anderson, Beitenman, Benschoter, Cunningham, L. Eaton, Henderson, Herrick, Hubbard, Landgraf, Michael, Phelps, Slagle, Wisman; Assistant Instructors Melcher, Timmons; Demonstrator Schaefer; Senior Consultants Gysin, Jolly-Fritz; Participating Consultants Hartle, Hunt; Consultant Roth.

Courses are planned to give the student, commencing in his freshman year, correlated, progressive training in the anatomical, physiological and psychological fundamentals of psychiatry and neurology.

Lectures and demonstrations in the freshman year emphasize the significance of personality development in relation to normal and abnormal functioning. The sophomore program consists of lectures and case demonstrations in basic psychiatry which include descriptive and dynamic psychopathology and technics of examination; and in neurology in which neurological illnesses, their relationship to the anatomical, pathological, and physiological factors are introduced. In the junior and senior years stress is placed on supervised experience with psychiatric and neurological patients, on inpatients, day patient and outpatient bases. Formal lectures are kept to a minimum, except for the clinical neurology lectures in the junior year. Instruction in psychiatry is correlated with the teaching in other departments.

Neurology and Psychiatry.—

Electives.—

301. Foundations of Human Behavior (4 qtr hr cr I) Hook

Prereq Graduation from an approved school of nursing, including 6 sem hrs in psychology or educational psychology

Study of fundamental biological and social drives as the motivating forces of human behavior; ways by which they are modified throughout a lifetime; and some of the psychological theories which contribute to an understanding of the dynamics of human relationships.

302. Developmental Psychology (2 qtr hr cr each I, II, no credit unless second quarter is successfully completed)

Prereq 6 sem hrs in psychology or educational psychology, open only to qualified students in the fields related to psychiatry and upon approval of the instructor

A broad and intensive survey of the nature and range of individual differences and the methods of personality assessment from infancy to old age; a background of knowledge of normal development as a sound basis for understanding pathological deviations.

303. Behavior Problems of Children (2 qtr hr each I, II, no credit unless second quarter is successfully completed)

Prereq 6 sem hrs in psychology or educational psychology including the teaching of the various schools of psychological theories. Open only to qualified students in the fields related to psychiatry and upon approval of the instructor

Deviation from normal behavior according to current child guidance theories with special emphasis on how a member of the professional psychiatric team helps families with emotional problems.

304. Social Group Work (2 qtr hr cr III) Garetz

Prereq Open only to qualified students in the fields related to psychiatry and upon approval of the instructor

Elementary group work principles; emphasis upon settings in which group work is practiced and its relationship to administration, supervision, and teaching.

305. Activity Therapy Analysis (3 qtr hr cr) Dundon

Prereq Open only to qualified students in the fields related to psychiatry and upon approval of the instructor

A psychodynamic approach to the analysis of activities used in psychiatric occupational therapy. The analysis of activities as they relate to creativeness, sociability, expression of hostility, compulsiveness, work tolerance and work readiness.

306. Business and Administration Problems for the Occupational Therapist (1 qtr hr cr) Dundon

Prereq Open only to qualified students in the fields related to psychiatry and upon approval of the instructor

A general study of the business and administrative aspects of an occupational therapy department, including budgeting, bookkeeping, and other matters pertaining to the handling of hospital funds. Also presented are

principles of organizational plans, policies, reports and records utilized in the hospital setting.

310. **Introduction to the Behavioral Sciences and Personality Development** (1 hr weekly, total 24 hrs II, III)
This course consists essentially of two sections. The first section constitutes an introduction to the behavioral sciences. This sequence surveys basic concepts in the behavioral sciences, methods of studying behavior, and the general adaptation of the organism to environment and culture. The second section concerns the emotional and social growth of the individual, with emphasis on the formative years of childhood. Reference is made to abnormal development, psychiatric syndromes, and the psychological aspects of medical practice.
320. **Basic Psychiatry** (1 hr weekly, total 36 hrs I, II, III)
During this course lectures and demonstrations of clinical material are held at the Nebraska Psychiatric Institute. The historical background of psychiatry, methods of interviewing, history-taking and general mental examination are presented. Descriptive aspects of clinical syndromes are presented. The course is preparatory to the junior clerkship in psychiatry and gives the student a basic understanding of mental illness from the standpoint of a general practitioner.
321. **Neurology** (1 hr weekly, total 12 hrs, III)
The neurological illnesses are discussed and demonstrated from the descriptive viewpoint and related to anatomical, pathological, physiological and psychiatric factors. The material is correlated with medicine generally and particularly with psychiatry. Diagnosis and treatment are emphasized.
330. **Neurology** (1 hr weekly, total 12 hrs, II)
Continuation of course 321.
335. **Clinical Clerkship** (13 hrs weekly, total 104 hrs I, II, III)
The junior class is divided into groups, each of which is assigned half time for eight weeks at the Nebraska Psychiatric Institute. Selected inpatients are assigned for history-taking and physical and mental examination. Students continue to see the patient in interviews during the whole of the clerkship. Work is supervised in detail. Seminars and lectures are included as well as demonstrations of interviewing technic and treatment. Lectures and demonstrations of common psychiatric disorders are presented.
340. **Neuropsychiatric Demonstrations** (1 hr weekly, total 4 hrs, SS, I, II, III)
Selected patients demonstrating various psychiatric and neurological disorders are presented and discussed by the senior faculty.
341. **Senior Clerkship** (32 hrs weekly, total 120 hrs, SS, I, II, III)
The senior class is divided into groups, each of which is assigned four weeks at the Nebraska Psychiatric Institute. Under supervision, students are given increasing clinical responsibility with patients on the adult inpatient service, adult outpatient service and children's services. Regular teaching seminars and conferences are scheduled.
342. **Dispensary** (7½ hrs weekly, total 30 hrs, SS, I, II, III)
Practical experience in diagnosis and treatment of outpatients in the psychiatric, neurologic and epileptic clinics is provided. Under supervision, the student gains experience in the diagnosis, treatment and management of a variety of common neurologic and psychiatric problems.
343. **Applications of Neurology and Psychiatry in Medical Practice** (4 wks, 140 hrs, SS)
Individual supervision in the diagnosis and treatment of psychiatric and neurologic illnesses, or in the study of current and emerging developments of biochemical, psychopharmacological, genetic, neurophysiological, and psychophysiological aspects of these problems. By special arrangement. Limited to 4 students.
344. **Research in Neurology and Psychiatry** (4 wks, 140 hrs, SS, I, II, III)
Laboratory or clinical research under direction in selected areas of psychiatry, neurology and/or behavioral sciences. By special arrangement. Limited to 4 students.
350. **Psychiatric Concepts** (3 qtr hr cr) Tunakan
Prereq Open only to qualified graduate students in an approved master's program
The historical development of concepts and attitudes of present-day psychiatric philosophy, treatment and diagnostic classifications is presented. The care and treatment of the psychiatric patient is correlated with dynamics of personality development and symptom formation.

- 351. Seminar in Psychiatric Nursing** (3 qtr hr cr each I, II, III) Hook
Prereq Open only to qualified graduate students in nursing in an approved master's program
 Intensive study will be made of the role of the psychiatric nurse as a nursing team member and an interdisciplinary team participant in any hospital or other appropriate community organization. Psychological and sociological assessment will be made of the dynamics of human behavior in various kinds of interpersonal relationships with patients and co-workers.
- 352. Field Instruction in Psychiatric Nursing** (12 qtr hrs cr total) Hook
Prereq Open only to qualified graduate students in nursing in an approved master's program
 Directed observations and participation in selected community services which demonstrate representative practices in psychiatric care. Opportunities are provided for the student to assess her abilities as a psychiatric nurse and to select an appropriate area in the intensive study of a field project.
- 353. Research Methods** (2 qtr hr cr III) Hook
Prereq Open only to qualified graduate students in an approved master's program
 Introduction to scientific methodology and thinking oriented specifically toward the needs of students in various psychiatric and neurologic disciplines with regard to research and evaluative methods.
- 354. Interdisciplinary Communication in Psychiatry** (2 qtr hr cr each II, III) Strough, Wittson
Prereq Graduate standing in fields related to psychiatry and upon approval of instructor
 Lecturers from the fields of psychiatry, clinical psychology, psychiatric social work, psychiatric nursing and other related fields will discuss their respective major contributions as related to formulation and application of psychiatric theory. Seminars relate to the current subject of discussion.
- 355. Basic Psychodynamics** (2 qtr hr cr each I, II) Starr
Prereq Graduate standing in fields related to psychiatry and upon approval of instructor
 Psychoanalytic theory of personality development of the normal individual. The material presents the factors influencing the growth and development of the individual from preconception through senescence. The developmental processes are related to the formation of personality and character as they affect normal behavior.
- 356. Problems in Psychiatric Nursing** (1-5 qtr hr cr) Staff
Prereq Open only to graduate students in nursing in an approved master's program and upon approval of the instructor
 Individual investigation other than thesis or field study of some special problem elected or assigned.
- 357. Advanced Technics of Psychiatric Occupational Therapy** (1 qtr hr cr I, II, III) Dundon
Prereq Open only to graduate students in occupational therapy in an approved master's program
 A study of technics and therapeutic trends in psychiatric treatment as related to development of new tools and technics of the occupational therapist in the psychiatric treatment program.
- 359. Seminar in Psychiatric Activity Therapy** (2 qtr hr cr per qtr—max 8) Dundon
Prereq Open only to graduate students in occupational therapy in an approved master's program
 An intensive study of the role of therapists in an interdisciplinary psychiatric setting. Psychological and sociological assessment of the dynamics of human behavior in various interpersonal relationships in which therapeutic activity is used as the modus operandi. Current theories of therapeutic activity are considered.
- 360. Field Instruction in Psychiatric Occupational Therapy** (4 qtr cr II, III, IV) Dundon
Prereq Neurol and Psych 305 and 350. Graduate standing and permission
 Directed observation and participation in the occupational therapy clinics or other psychiatric agencies and facilities which demonstrate representative practices in psychiatric treatment. Opportunities are provided for students to demonstrate their understanding and abilities as psychiatric occupational therapists in the selected areas of their choice.

Obstetrics and Gynecology

Assistant Professor Pearse, *Chairman*; Professors Holly, McGoogan; Associate Professors H. Anderson, Redgwick; Clinical Associate Professors Richard Garlinghouse, H. Morgan; Assistant Professors Collins, Cotton, Olson, Rumbolz; Clinical Assistant Professor McGinnis; Research Assistant Professors Brizzee, Kadis; Associates Boelter, Kovarik, Soule, Taylor; Clinical Associates Gorthey, Harold Harvey; Instructors George, Hirst, Jernstrom, Magid, Schack; Clinical Instructors Ballew, Hansen, L. Johnson, Roffman, Schmidt, Sundell, Yost; Assistant Instructor John McCarthy; Clinical Assistant Warden; Senior Consultant Luikhart; Emeritus, Harry Harvey, Moon.

The objectives of this department are the integration of reproductive physiology, biochemistry, and anatomy with the normal and abnormal problems of obstetrics and female reproductive tract. Lectures and small group seminars carry this integration through the last three years of medical school. Obstetric cases are assigned under direction to the third year medical class, and extensive practical experience is provided the fourth year class through assignment to the outpatient prenatal and gynecology clinics and to affiliated hospitals.

Undergraduate students are encouraged to participate in research projects, and those with particular interests are given direction and support. A wide variety of advanced courses is available, and fourth year students are urged to select a program to meet their future needs.

Obstetrics and Gynecology.—

320. **Introduction to Obstetrics and Gynecology** (1 hr weekly, total 16 hrs, I, II)
Anatomy, physiology, and biochemistry of the reproductive tract, and their relation to normal obstetrics and gynecology.
330. **Obstetrics and Gynecology** (1 hr weekly, total 40 hrs, I, II, III)
Abnormalities and complications of pregnancy, labor, and the puerperium. Theory, diagnosis and management of gynecologic disease.
335. **Junior Clinical Clerkship** (Total 112 hrs, I, II, III)
Third-year students are assigned to the University Hospital obstetric and gynecologic service. They follow the progress of patients in labor, assist at deliveries, follow the workup and management of gynecology patients, assist at operative procedures and maintain a complete record until the patient is discharged from the hospital. They attend weekly obstetrics and gynecologic conferences, ward rounds and seminars.
340. **Obstetrics and Gynecology** (1 hr weekly, total 12 hrs, II)
Continuation of Course 330.
341. **Senior Clinical Clerkship** (Total 224 hrs, SS, I, II, III)
Fourth-year students are assigned to a hospital obstetrics and gynecologic service for more advanced and practical experience. They follow the progress of patients in labor and assist at or perform deliveries. They follow the workup and management of gynecologic patients and assist at operative procedures. They are assigned to the outpatient obstetric and gynecologic clinics. They attend weekly obstetric and gynecologic conferences, ward rounds and gynecologic pathology conferences.
350. **Advanced Obstetrics and Gynecology** (6 qtr hr cr per q.-max 24) Staff
Conferences, demonstrations, and clinical assignments designed to familiarize the student with all phases of obstetrics and gynecology. The application of anatomy, physiology, biochemistry, pathology and microbiology will be stressed. Diagnosis and management of obstetric and gynecologic conditions will be emphasized.
351. **Gynecological Pathology** (3 qtr hr cr per q.-max 9) Holly, Schenken, Tollman, Staff
An advanced course in gross and microscopic pathology in the field of obstetrics and gynecology. The student is required to attend two weekly conferences in gynecologic pathology. Clinical work consists in preparation, review, and description of all specimens submitted in this area.
352. **Pelvic Anatomy** (4 qtr hr cr) Brizzee, Holyoke, Latta
Special dissection and study to cover the basic science aspects of anatomy and embryology as applied to obstetrics and gynecology. This work will consist of special dissection, reading, and histologic study of the generative tract.
353. **Gynecologic Radiology** (1-5 qtr hr cr) Hunt, Staff
Readings, demonstrations, clinics and seminars designed to show the application of radiographic and radio-therapeutic principles and procedures of ob-

stetrics and gynecology. Conducted in conjunction with the Department of Radiology, this course gives experience in radiographic technic, the interpretation of films, and the use of x-ray and radium. Independent reports will be required.

354. **Advanced Course in Gynecological Surgery** (4 qtr hr cr per q.—max 8) Staff
Conferences and demonstrations of principles and technic of gynecological surgery. The student will perform surgical procedures under the supervision of the supervisory staff. Special technics are included.
355. **Endocrinology of the Sex Hormones** (Biochemistry 362) (3-5 qtr hr cr) Kadis, Wilder
Prereq Med Biochem 310 or its equivalent
A lecture course designed to acquaint the student with the chemistry and metabolism of the estrogens, androgens, progestational substances, and gonadotropins. Essential information on adrenal hormones will be included as needed.
356. **Gynecologic Endocrinology** (3-5 qtr hr cr) Kadis, Pearse
Prereq Biochem 353 and Obstetrics and Gynecology 355
A course in applied endocrinology with emphasis on the diagnosis and management of a variety of gynecologic disorders. The lecture series will be accompanied by assignment of the student to the clinical service.
357. **Obstetrical Hematology** (3 qtr hr cr) Holly
A course in applied hematology with emphasis on problems which occur in pregnancy. The lecture series will be accompanied by laboratory work and by clinical work in the clinic and hospital.
358. **Research in Obstetrics and Gynecology other than Thesis** (cr arr) Staff
359. **Obstetrics and Gynecologic Seminar** (1 qtr hr cr per q.—max 8) Staff
360. **Thesis** (cr arr) Staff

Ophthalmology

Professor Judd, *Chairman*; Associate Professors Alliband, Gifford, Morrison; Assistant Professors Eagle, Filkins, Latta, Meissner, Rasgorshek, Steinburg, Truhlsen, Vickery; Clinical Assistant Professor Wood.

Ophthalmology.—

320. **Medical Ophthalmology** (1 hr weekly, total 17 hrs, III)
The didactic course consists of demonstrations and lectures on diseases of the eye, including ocular changes in general diseases. The lectures are illustrated by cases, diagrams, charts, and slides. The course is supplemented by textbook work and quizzes.
335. **Clinical Clerkship** (Total 24 hrs, I, II, III)
Selected cases of eye pathology are shown to small groups of students illustrating the major types of disease that are encountered in medical practice.
340. **Dispensary** (Total 48 hrs, SS, I, II, III)
Students are regularly assigned to the dispensary clinic for practical experience in the diagnosis and treatment of eye conditions. This course includes a drill in the principal uses of the ophthalmoscope and other instruments employed in the diagnosis of diseases of the eye.

Orthopedic Surgery

Associate Professor Waters, *Chairman*; Professors Hamsa, H. Johnson; Associate Professor Teal; Assistant Professors Bach, Burney, Hood, R. Smith; Instructors Weingarten, Dinsmore.

Orthopedic Surgery deals with the diseases, deformities, and injuries of the structure composing the musculo-skeletal system.

Orthopedic Surgery.—

330. **Fractures, Dislocations and Sprains** (1 hr weekly, total 12 hrs, III)
Lectures and clinics on anatomy, pathology and treatment of fractures, dislocations and sprains.
340. **Diseases of Bones and Joints** (1 hr weekly, total 16 hrs, I)
Lecture clinics on disease of bones and joints, synovial membranes and bursae. Congenital, acquired, and disease-producing deformities. Prevention of deformities and dystrophies with principles of treatment. Illustrated by photographs, slides, etc.

342. **Fractures, Dislocations and Sprains** (1 hr weekly, total 16 hrs, SS, I, II, III)
Lectures, quizzes, and demonstration course on fractures, dislocations, and sprains. X-ray diagnosis with application of splints and casts.
343. **Orthopedic Clinical Clerkship** (Elective, 4 wks, SS, I, II, III)
Clinical experience with members of the Orthopedic Staff at the University Hospital and affiliated hospitals. May be substituted for Surgery 341 or 343 by arrangement.
350. **Research** (1-7 cr) Staff
Work for specially qualified students in special fields of investigation.
351. **Seminar** (1-6 cr) Staff
Literature reviews and reports of progress of research in special fields of investigation.

Otorhinology

Associate Professor Klabenes, *Chairman*; Professor Cassidy; Associate Professors Carp, Lovgren; Associates J. A. Davis, Gillies; Clinical Assistant Professor P. L. Peterson.

Otorhinology.—

One lecture is given on the anatomy of the ear and temporal bone and demonstration of the tympanic membrane in the freshman year in Anatomy.

Two lectures on the examination of the ear, nose, pharynx, and larynx; and two 2-hour demonstrations on the use of instruments commonly used in ORL examinations are given in conjunction with the sophomore course in Physical Diagnosis.

330. **Disease of Ear, Nose, Throat and Larynx** (1 hr weekly, total 16 hrs, I)
Lectures covering the anatomy, physiology, common diseases, abnormalities, tumors, diagnosis, and treatment in the ORL field.
Ward Clinics (Groups of ten students, 3 hrs weekly, total 12 hrs)
Four periods of two hours each which include ward rounds whenever feasible and definitive instruction in carrying out complete ORL examinations are given each group of students.
340. **Dispensary** (3 hrs weekly, total 12 hrs, SS, I, II, III)
Clinics are held once weekly at the University Dispensary. Senior students are assigned patients for examination, diagnosis, and treatment under supervision. Conferences are frequently held during these hours.

Pathology

Professors Schenken, *Chairman*, McWhorter, Tollman; Associate Professors Kulesh, Simons; Clinical Associate Professor Tanner; Assistant Professors Foster, Giffen, F. Smith, Wilson; Clinical Assistant Professors T. R. Anderson, Coleman; Associates Fitch, Greene; Clinical Associates Papenfuss, Tamisiea; Assistant Instructors Haslam, Larsen.

It is the aim of this department to acquaint the student with the etiology, the pathologic physiology, and the morphologic changes produced by disease processes in the human body.

Pathology.—

321. **General Pathology** (Total 275 hrs, I, II, III)
This course emphasizes the etiology and morphologic alterations produced by disease processes. It comprises the general principles of the reaction of the body to injury and of specific disease processes in detail by organ systems in both lecture and laboratory exercise. This course is closely integrated with the course in Medical Microbiology 320 so that at the time the student studies microbiologic aspects of microorganisms, the alterations produced in the tissues and organs of the body by the same organisms are covered.
322. **Clinical Pathology** (2 hrs lecture, 3 hrs laboratory weekly, total 60 hrs, III)
The lecture and laboratory course emphasizes selection and performance of laboratory tests used by the physician. The student becomes proficient with many such tests and acquires a working knowledge of the remainder. Special emphasis is placed upon the selection of tests and the interpretation of the results of such tests, correlating these results with the clinical findings.
331. **Clinical Pathology** (Total 75 hrs, I, II)
Continuation of course 322.

332. **Clinical Pathology Conference** (1 hr weekly, total 24 hrs, II, III)
Selected cases are presented by a clinical department and the Department of Pathology for discussion of the differential diagnosis, management, and correlation of the clinical findings with the pathology.
333. **Correlative Clinical Pathology** (1 hr weekly, total 36 hrs, I, II, III)
Selected cases are discussed from the standpoint of correlation of clinical observations with radiological and pathological findings. Whenever possible these cases parallel the lectures given in clinical departments.
340. **Clinical Pathology Conference** (Total 40 hrs, I, II, III)
Continuation of Course 332.
341. **Correlative Clinical Pathology** (Total 40 hrs, I, II, III)
Continuation of course 333.
356. **Autopsy Pathology** (8 cr) Schenken
Prereq Path 320
In addition to participation in autopsies, the student will study in detail both gross and microscopic tissue changes, and will correlate these with clinical findings.
357. **Pathology of Tumors**
a. **An Intensive Course in Oncology, With Special Attention to the Morphology Derivation and Course, of Various Tumors** (4 cr) Schenken, Staff
Prereq Path 356
b. **Studies of Bone Tumors** (3 cr)
Prereq Path 357a
c. **Studies of Tumors of the Nervous System** (3 cr)
Prereq Path 357a
358. **Etiology of Tumors** (1 cr) Schenken
Prereq Path 356
This will be a general study of the subject of tumor etiology with special emphasis on the phases represented by the investigative work carried on by the student. In large part this will be carried on by study of the periodical literature.
359. **Seminar** (1 cr) Staff
By permission
360. **Research** (cr arr) Staff

Pediatrics

Professors Gibbs, *Chairman*, Crofoot, Gedgoud, Robertson, Thomas; Clinical Professor Stafford; Associate Professors Klok, Morrow; Clinical Associate Professors Bancroft, Stewart; Assistant Professors C. R. Angle, Mooring, Nilsson, Oberst, Schreiner, D. I. Smith, Zahller; Clinical Assistant Professor Bosley; Associates C. F. Bantin, Ebers; Instructor Rath; Clinical Instructors Fijan, Grant,

The aim of this department is to develop in the student an understanding of human growth and development, as well as the diseases characteristic of infancy, childhood and adolescence. This is done through the lectures and demonstrations, small group bedside conferences and discussions, clinical clerkship at the University Hospital and the Childrens Memorial Hospital and the outpatient service at the University Hospital. Special orientation and training in rehabilitation is given at the new Rehabilitation Center.

Undergraduate students are encouraged to participate in research on a wide variety of projects, and students who show particular interest in a given problem are afforded guidance and support in their scientific investigations.

Pediatrics.—

320. **Growth and Development** (1 hr weekly, total 16 hrs, II, III)
Lectures on basic principles of total growth. The rate of progress to be expected in weight and length, together with the mental and emotional development from birth to adolescence, is discussed. Part of the course is devoted to presentation of some of the anomalies and diseases encountered during the newborn period.
330. **Diseases of Childhood** (1 hr weekly, total 40 hrs, I, II, III)
In this course are covered the various diseases of childhood, including the diseases by systems, deviations in growth and development, nutritional diseases and communicable diseases.
335. **Clinical Clerkship** (22 hrs weekly, total 88 hrs, I, II, III)
Students are assigned at the Children's Memorial Hospital for complete study including history, physical examination, routine and special laboratory tests and other aids for the establishment of diagnosis with a view toward an effective

program of therapy. Students are expected to have full knowledge of the cases assigned to them and also to be familiar with patients on the ward assigned to other students. Each student is held responsible for presentation of his cases at any time he may be called upon by the instructor during ward walks. These students participate in the newborn out-patient clinic held weekly at the University Dispensary.

340. **Hospital Clinics** (1 hr weekly, total 18 hrs, SS, I, II, III)
Clinics in all aspects of pediatrics are included in this course, utilizing material on the wards of the University Hospital and Children's Memorial Hospital as well as other institutions affiliated with the College of Medicine. An effort is made to cover the entire field of pediatrics as seen in the various institutions.
341. **Dispensary** (15 hrs weekly, total 90 hrs, SS, I, II, III)
Clinics are held at the dispensary to which fourth-year students are assigned for practical work in the diagnosis and treatment of ambulant cases. All children enter the dispensary through the pediatric clinics. Special clinics for heart, allergy, neurological and metabolic cases.
342. **Senior Clerkship** (30 hrs weekly, total 180 hrs, SS, I, II, III)
Clinics are held at the dispensary to which fourth-year students are assigned for practical work in the diagnosis and treatment of ambulant cases. All children enter the dispensary through the pediatric clinics. Special clinics for heart, allergy, neurological and metabolic cases.
342. **Senior Clerkship** (30 hrs weekly, total 180 hrs, SS, I, II, III)
Senior students are assigned to the pediatric ward and the newborn nursery of the University Hospital for a period of 6 weeks under staff direction. They are required to work up cases assigned to them, and to acquire general information regarding diagnosis and therapy on all patients admitted to the hospital to enable them to participate in the discussion of these cases. They are also assigned to the admitting and emergency sections of the hospital under the direction of the Staff. Senior clerks are encouraged to participate freely in all staff conference discussions.
- Junior and senior students interested in special problems in pediatrics are encouraged to engage in research under the direction of the staff. Arrangements for such work should be discussed with the Chairman of the Department.
350. **Pediatric Gastroenterology** (3 qtr hrs per qtr, total 9 qtr hrs) Gibbs
Prereq Medical school courses as follows: biochemistry, physiology, and histology or their equivalents
The special characteristics of the gastrointestinal physiology of the normal infant and the pathological physiology, clinical manifestations, and treatment of gastrointestinal diseases of special importance in early life will be surveyed. Particular attention will be given to the chronic metabolic diarrheas.
351. **Endocrine and Metabolic Diseases in Early Life** (3 qtr hrs per qtr, total 9 qtr hrs) Gibbs
Prereq same as in Course 350
The normal endocrine physiology is reviewed as it pertains to the infant, child, and adolescent. Abnormalities of endocrine and metabolic nature in early life are considered.
353. **Developmental Behavior Pattern of the Newborn** (3 qtr hrs per qtr, total 6 qtr hrs) Gibbs
Prereq M.D. degree or B.S. in Nursing or undergraduate major in psychology
A study of activities of the normal infant as related to environmental factors.
355. **Advanced General Pediatrics** (SS, I, II, III, 6-12 qtr hrs)
Prereq Pediatrics 341, 342
Students study special patients presenting diagnostic and therapeutic problems of unusual interest. These studies summarize all pertinent literature and include laboratory procedures not routinely available.
358. **Pediatric Research Seminar** (2 qtr hrs per qtr, total 6 qtr hrs) Gibbs
Selected topics of current research or contemplated research with presentation of appropriate patients.
359. **Research in Pediatrics** (cr arr) Gibbs
Prereq Ped 358 completed or in progress

Physical Medicine and Rehabilitation

Assistant Professor Frost, *Chairman*; Professor Hunt; Associates Aita, Bach, Fricke, Malashock, Morris, Swenson, Jr., Thomas; Lecturers Ann Johnson, Hirsch, Hobbs, Jensen, Pliska, Rembe, Vogt; Demonstrators Bohnenkamp, Burton.

The principles and technics of Physical Medicine and Rehabilitation are presented at assigned times to the student body. A one-hour lecture on Philosophies and Principles of Physical Medicine and Rehabilitation is given in the sophomore year.

The junior and senior students are divided into groups of approximately eight students each. The junior students receive 16 hours of lectures and clinical demonstrations, and the senior students receive 16 hours of clinical experience at assigned times over a four-week period, at the Nebraska University and Douglas County Rehabilitation Center.

- 330. Principles of Physical Medicine and Rehabilitation** (Total 16 hrs, I, II, III) Frost and Staff
Covers the aspect of their individual fields of work or specialty concerned in the total approach to evaluation and treatment of disabled persons.

Physiology and Pharmacology

Professors McIntyre, *Chairman*, Bennett; Associate Professors F. L. Dunn, Ware; Associate Research Professor Humoller; Associate Professor Lambooy; Assistant Professors Gessert, Sievers, Speaker, Stratbucker; Adjunct Instructor Browne.

The courses in *Physiology and Pharmacology* 310-327, inclusively, stress the fundamental principles underlying living processes in health and disease and provide a comprehensive basis for medical practice. Courses 350-357, inclusively, are designed for special instruction for advanced students in *Physiology and Pharmacology*.

Physiology and Pharmacology.—

- 310. General Introductory Course** (lectures, demonstrations, and conferences, total 72 hrs, III)
This course presents the essentials of physiology and pharmacology as a basis for more advanced study. The mechanisms by which the body cells maintain the normal milieu intérieur are examined and emphasized and the fundamentals of neurophysiology including the autonomic system and the pharmacology of neural-effector cell transmission are described. The principles of endocrinology and the fundamental physiology of the pituitary gland, gonads, thyroid, parathyroid, islet tissue, and adrenals are outlined.
- 311. Physiology and Pharmacology Laboratory Course** (total 84 hrs, III)
In this course students perform experiments designed to illustrate basic physiological technics and apparatus and are directed towards illustrating salient principles as concurrently developed in the lecture course. Several demonstrations are conducted using more advanced technics to illustrate principles of electrophysiology and the mammalian preparations. Other teaching aids, such as film and discussion groups, are employed.
- 322. Physiology and Pharmacology Lectures and Demonstrations** (Total 84 hrs, I)
The concepts presented in Courses 310 and 311 are developed to include the pharmacology of the anesthetics and the drugs acting on the nervous system. The neuromuscular apparatus and the mechanisms relating to posture are considered. The depressant drugs, including hypnotics, antipyretics, analgesics and tranquilizers, are discussed in detail. The cardiovascular, respiratory, and renal systems are discussed in detail together with the pharmacological agents effective in these systems.
- 323. Physiology and Pharmacology Laboratory** (total 84 hrs, I)
The elements of anesthesia are presented concurrently with practical work in anesthesiology on mammals. This course consists largely of acute mammalian experiments designed to illustrate the fundamentals of cardiovascular, renal, and respiratory physiology, and the pharmacology of cardiovascular drugs.
- 324. Physiology and Pharmacology Lectures and Demonstrations** (total 84 hrs, II)
The physiology and pharmacology of the gastrointestinal tract are examined in detail. The specific pharmacological agents including chemotherapeutic drugs and antibiotics are discussed in detail. The endocrine system is further examined and the hormones and their therapeutic uses stressed.
- 325. Physiology and Pharmacology Laboratory** (total 84 hrs, II)
The laboratory exercises include experiments and demonstrations of the therapeutic and hormonal agents discussed in Course 324, the content of which is supplemental and complemented by exercises, demonstrations and discussions.
- 326. The Physiology of the Eye and Ear** (total 24 hrs, III)
The principles of vision, hearing and the vestibular functions of the ear are presented. The pharmacology of the drugs and other agents used in the eye and ear are considered in detail.
- 327. The Physiology of the Eye and Ear Laboratory** (total 24 hrs, III)
This consists of laboratory experiments and demonstrations illustrating basic

principles of visual optics, properties of the retina, visual reflexes, central mechanisms of visual perception, and the action of drugs on the eye. Peripheral and central auditory and vestibular mechanisms of the ear are studied. This course supplements Course 326.

350. **Technic in Experimental Physiology and Pharmacology** (1-9 qtr hrs cr) Bennett, McIntyre, Bisgard and Staff

Prereq Physiol and Pharmacol 310, 311

This course consists of instruction in surgical procedures on mammalia, reptilia, and amphibia and the preparation of organs and tissues *in situ* and *ex situ* for experimental study; instruction in the construction, manipulation and operation of apparatus.

Special Physiology and Pharmacology.—

- 351-1. **Advanced Physiology and Pharmacology** (1-9 qtr hrs cr) Bisgard, Browne, Ware

Prereq Physiol and Pharmacol 350

In vivo aseptic preparations; instruction in the fundamental technics of aseptic surgery for the preparation of animals for study, and their postoperative care.

- 351-2. **Advanced Physiology and Pharmacology** (1-9 qtr hrs cr) McIntyre

Prereq Physiol and Pharmacol 350

In vivo preparations. The preparation of tissues for *in vitro* metabolism studies, perfusion of organs, isolated heart preparations, isolated smooth and striated muscles, myography, electromyography, cardiography, oncometry, and plethysmographic studies.

- 351-3. **Electro-Physiology** (1-9 qtr hrs cr) Bennett, Stratbucker

Prereq Physiol and Pharmacol 350

Preparation of nerve for action-potential studies and other phenomena associated with nerve-activity; the electrostatic voltmeter, the cathode ray oscilloscope, direct-current amplification; the modification of nerve-activity by chemical and physical agents.

Advanced Pharmacology.—

- 352-1. **Advanced Pharmacology-Toxicology** (1-9 qtr hrs cr) Humoller, Stratbucker, Gessert

Prereq Physiol and Pharmacol 350

The recognition of poisons in the body. The quantitative determination of toxic substances in necropsy materials and excreta; polarigraphic quantitative determination of metallic ions present in tissues. Qualitative and quantitative tests for alkaloids by polarigraphic and other methods.

- 352-2. **Advanced Pharmacology-Bioassay** (1-9 qtr hrs cr) Humoller, McIntyre

Prereq Physiol and Pharmacol 350

The assay of drugs and hormones and so-called vitamins by biometric methods, including standardization of drugs and biologically active substances.

- 353-1. **Vitamin and Endocrine Studies—The "Deficient State"** (1-9 qtr hrs cr) Staff

Prereq Physiol and Pharmacol 350

Animal experiments on diets deficient in accessory food factors; avitaminosis; physico-chemical properties of accessory food factors; isolation and purification of accessory food factors.

- 353-2. **Vitamin and Endocrine Studies—The Endocrine System** (1-9 qtr hrs cr) McIntyre, Speaker

Prereq Physiol and Pharmacol 350

Studies in hypo- and hyper-normal hormonal activity; technics for extirpation of glands of internal secretion.

354. **Application of Physiology and Pharmacology to Clinical Problems** (1-9 qtr hrs cr)

Bennett, McIntyre, Stratbucker, Ware

Prereq Physiol and Pharmacol 350

Electrocardiography, electrostethoscopy, metabolic rates, pulmonary function tests. Study of neuro-muscular lesions by physiological methods; application of endocrinology to obstetrics and gynecology and medicine; special use of drugs and their diagnostic and therapeutic use in clinical problems.

355. **Special Applications of Physiology and Pharmacology to Industrial Medicine and Surgery** (1-9 cr) Bennett, McIntyre, Sievers, Ware

Prereq Physiol and Pharmacol 350

Physiological principles in shock therapy due to trauma; low pressure, low oxygen tension encountered in high altitude aviation. Physiological effects of high pressure. Caisson disease; noxious gases and toxic industrial poisons.

- 356. Biophysics and Biochemistry of the Cell** (4-15 cr) Humoller, McIntyre, Stratbucker
This course places special emphasis on the physiology and biochemistry of the anatomical units of the neuro-muscular system, and the effects of drugs, poisons, and physical agents upon their functions and enzyme systems.
- 357. Seminar** (1 or 2 qtr hrs cr per qtr) Staff
- 358. Research in Physiology and Pharmacology** (cr arr) Staff

Preventive Medicine

Professor Potthoff, *Chairman*; Associate Professor Rogers; Assistant Professor Harley; Instructors Kutler, M. W. Johnson; Lecturers Cappiello, Crabill, DuBois, McArdle.

These courses aim to give the students basic orientation and preparation related to physicians' increasingly important responsibilities in preventing disease, promoting efficiency, acting as health counsellors and serving as community leaders in health matters. The field work of the junior year is carried on through cooperative agreement with the Omaha-Douglas County Health Department.

- 310. The Accident Problem and Field Emergency Care** (2 hrs weekly, total 16 hrs, III)
This course is offered cooperatively with the Department of Surgery. Includes study of the epidemiology of accidents and methods of immediate care under field conditions.
- 320. Principles of Preventive Medicine** (2 hrs weekly, I; 1 hr weekly for four wks, II, total 28 hrs)
Considers our major health problems and the organization and programming principles in our society at local, state, and national levels to promote good health; biostatistics; occupational health.
- 321. Principles of Preventive Medicine** (2 hrs weekly, total 24 hrs, III)
Includes epidemiology, with emphasis upon the preventive aspects of medical practice.
- 330. Clerkship in Preventive Medicine** (Total 35 hrs, I, II, III)
Field trips to facilities and agencies of public health importance; topic and case studies embodying aspects of disease prevention, use of community resources and comprehensive care; medical socio-economics.

Radiology

Professors St. Aubin, *Chairman*, Hunt, Moore; Associate Professors E. S. Pederson, R. E. Waggener, R. Ogborn; Clinical Associate Professor Fraser; Assistant Professors Bunting, A. L. Dunn, S. Gunderson, Saichek; Clinical Assistant Professor Neely; Instructors Adkins, Blotcky, Mohiuddin, Schlichtemier, Watson; Clinical Instructors Bradley, James; Assistant Instructors Niess, Swanberg.

The curriculum in Radiology aims to relate the physical and biological principles of radiation effects to the basic sciences and to the diagnosis, prevention, and treatment of disease.

The principles of radiology presented during the third quarter of the second year relate to radiation physics, radiobiology, principles of radiographic technics and the interpretation of roentgenograms.

During the third year radiologic interpretation is continued by lectures and diagnostic conferences during the first quarter. The principles of radiotherapy are presented during the second quarter. Sectional teaching to groups of four to eight students is conducted by demonstrations, ward rounds, film reading sessions, group conferences, and tumor clinics.

Radiological Anatomy

Taught as part of gross anatomy.

- 320. Principles of Radiology** (1 hr weekly, total 12 hrs, III)
- 330. Principles of Radiology** (1 hr weekly, total 28 hrs, I, II)
- 331. Clinical Radiology** (total 16 hrs) Staff
Assignment of a group of four to eight students who, during four weeks, observe and participate in radiographic technic, fluoroscopy, radiographic interpretation, radioisotope clinic, cancer follow-up clinics, and ward rounds on radiotherapy service.

341. **Radiologic Conference and Clinic** (1 hr weekly, 20 hrs, I, II, III. September through May at the Nebraska Methodist Hospital) Hunt, Moore, Waggener
Clinical presentation correlating clinical and radiologic findings in selected cases with participation by radiology, pathology, and involved clinical specialties.
342. **General Radiology Clerkship for Seniors** (4 wks, SS, I, II, III)
Assignments correlating specific clinical problems with radiologic diagnosis and/or therapeutic management. Attendance at seminars, conferences, and tumor clinics. University Hospital.
343. **Diagnostic Radiology Clerkship** (4 wks, SS, I, II, III)
Observation and case assignments in radiographic technic and interpretation of roentgenograms. Attendance at seminars and interdepartmental conferences. University Hospital.
344. **Therapeutic Radiology and Nuclear Medicine Clerkship** (4 wks, SS, I, II, III)
Specific case assignments in radiotherapy and nuclear medicine. Participation in hematology, gynecology, surgery and radiotherapy, tumor clinics, and attendance at seminars and conferences. University Hospital, Nebraska Methodist Hospital, and Veterans Hospital.
350. **Advanced Diagnostic Radiology** (4 to 8 cr) Bunting, Gunderson, Moore, Pederson, St. Aubin
Prereq Radiol 320, 330, 331
Responsible analyses of the status of the various tissues, organs, regions, and systems of the body through correlation of radiographic and fluoroscopic observations with anatomy, physiology, and pathology.
352. **Advanced Therapeutic Radiology** (4 to 8 cr) Hunt, Waggener
Prereq Radiol 320, 330, 350, 354, 355
Systematic consideration and responsible application of roentgen rays, radium and radioisotopes in the treatment of benign and malignant diseases involving the various organs and regions of the body.
353. **Seminar** (1 cr per sem) Staff
Elective for seniors by arrangement.
354. **Radiological Dosimetry** (3 to 8 cr) Blotcky, Mohiuddin, Waggener
Prereq Radiol 320, and consent of department
Analysis of factors controlling the intensity, quality, distribution, absorption, and effects of radiation in phantoms, barriers, and tissues.
355. **Radiobiology** (3 to 10 cr) St. Aubin, Hunt, Latta, Waggener
Prereq Anat 314, 315, Radiol 320, 354 (may be concurrent)
Assigned laboratory projects and reading for analysis of basic biologic effects of radiation on cells, tissues, and organisms.
356. **Nuclear Technology and Biophysics** (3 to 8 cr) Bunting, Dunn, Hunt, Ogborn
Prereq Physiol 320, 321, Radiol 320, 354
Lectures, assigned laboratory projects, practice and correlated reading referable to special applications of nuclear technology in basic medical science and clinical practice. Elective for seniors by arrangement.
357. **Thesis** (cr arr) Staff

Surgery

Professors Musselman, *Chairman*, Bisgard, Finlayson, Hodgson, Jones, McLaughlin; Research Professor H. L. Davis; Associate Professors Barmore, Browne, Kennedy, Potter, Swenson, Waggener; Clinical Associate Professor Morton; Assistant Professors Brauer, Brush, Coe, J. B. Davis, Frank, Irons, G. N. Johnson, Kleitsch, McMurtrey, D. M. Miller, Neis, Pester, Rasmussen, Rees, Therien, D. H. Thompson, C. Wilson; Clinical Assistant Professors Cherry, Davies, Robert Garlinghouse, Gogela, Hilton, W. W. Webster; Associates L. L. Anderson, Cochran, Latenser, L. W. Thompson; Clinical Associate Cole; Instructors Bruce, Carter, Hachiya, Hanisch, Karrer, Kimball, Kutler, Landry, Melcher, Montgomery, Porter, H. Rath, Schultz, L. D. Smith, Stroy, Watland; Clinical Instructors Ehrlich, Hillyer, LeWorthy, Moessner, Wiedman; Assistant Instructors Chleborad, Dahlheim, Lawton, Martin, C. W. Olson, Sasse, Singer; Clinical Assistant Brinkman.

The courses in surgery are given in the junior and senior years. However, the student is introduced to surgery in his freshman year in the Correlation Hour of the Department of Anatomy. The student has further work in surgery in the sophomore year as a part of the course in Physical Diagnosis. In the clinical years the student is encouraged by direction and by precept to review the basic sciences as related to each disease which he encounters and to apply this knowledge in learning and understanding the principles of surgery.

The courses in surgery are planned to give the student a thorough understanding of the principles of surgical pathology, surgical diagnosis, and surgical treatment. The undergraduate courses do not include instruction in major operative technic. Minor operative technic is taught in the Clinical Clerkship and Dispensary and includes practical exercises. The technic for performing such major operations as would come to the practitioner in the course of general work or as emergencies is taught during the internship. Preparation for the practice of surgery requires additional postgraduate training as a resident in surgery. Surgery includes a section of general surgery, a section of neurosurgery, a section of thoracic and cardiac surgery, a section of plastic, maxillo-facial and dental surgery, and a section of anesthesiology.

Surgery.—

- 330. Fundamentals of Surgery for Juniors** (2 hrs per wk I and II; 1 hr per wk III, total 68 hrs)
A presentation of the principles of surgery by assigned reading and by lectures, demonstrations, and quizzes supplementary to the text.
- 335. Clinical Clerkship for Juniors** (12 wks, total 360 hrs, I, II, III)
Students spend twelve weeks on surgery, during which time they are assigned patients in the University Hospital or affiliated hospitals. They follow these patients under close supervision. The students have responsibility for the history, physical examination, routine laboratory work, differential diagnosis, progress notes, operative report, pathology report, and case summary on patients assigned to them. Progress notes include discussion of pathogenesis, explanation of symptoms, rationale of treatment, and prognosis. Instructors review the cases with the students individually and on ward rounds. The students receive training and practical experience in a sepsis and operating room technic, and in gross surgical pathology by assisting at operations on their own patients. Total hours include clerkship in orthopedics and urology.
- 340. Neurosurgery Fundamentals** (12 hrs)
Lectures in fundamentals of neurosurgery.
- 341. Clinical Clerkship for Seniors** (6 wks, 210 hrs, SS, I, II, III)
Students are assigned as clinical clerks to the several hospitals affiliated with the Medical College. The students serve on general surgery. They work under the close supervision of members of the faculty. The course includes teaching conferences but no didactic work. Senior clerks have similar but greater responsibilities than those described for junior clerks. During the Surgery Clerkship students spend two weeks on anesthesiology, at which time they participate in administration of anesthetics to patients in the assigned hospital. Pertinent topics related to the patients are discussed with the staff. Courses 342, 348, 349 and Orthopedics 343 may be substituted by arrangement. SS clerkship is limited to 6 students.
- 342. Clinical Clerkship for Seniors in Neurosurgery** (Elective, 4 wks, SS, 6 wks, I, II, III)
Clinical experience with members of the Neurosurgical Staff at the University Hospital and affiliated hospitals. May be substituted for 341 or 343 by arrangement.
- 343. Dispensary Clerkship for Seniors** (6 wks, 140 hrs, SS, I, II, III)
Patients are assigned to students for diagnostic evaluation and treatment as an outpatient. A practical experience is gained in "office operations" and local anesthesia. Services include general surgery, neurosurgery, orthopedics, urology, eye, ENT, physical medicine and rehabilitation and tumor follow-up. Courses 342, 348, 349 and Orthopedics 343 may be substituted by arrangement. SS clerkship limited to 6 students.
- 347. Anesthesiology Lectures and Demonstrations** (12 wks, 12 hrs, I)
- 348. Anesthesiology Clerkship for Seniors** (Elective, 4 wks, SS)
A practical experience in the administration of all types of anesthetic agents with emphasis on fundamentals. May be substituted for 341 or 343 by arrangement. SS limited to 4 students.
- 349. Research in Surgery** (Elective, 4 wks, SS, I, II, III)
A supervised experience in laboratory or clinical research expected to be suitable for publication. May be substituted for 341 or 343 by arrangement. SS limited to 4 students.

Surgery, General Exercises.—

Introduction to Clinical Medicine (Total 12 hrs, III)

This course for sophomores is held weekly, jointly with the Department of Medicine. A member of each department is present, and together they discuss

such subjects as aging and involution, diseases of medical progress, shock, fever, reaction to injury and stress.

Medical-Surgical Conference (First Tuesday each month, September through June, 8:00 to 9:15 a.m., Medical Amphitheater)

A joint presentation of the Departments of Medicine and Surgery at which patients with problems of common interest are presented and discussed by members of basic science and clinical departments. This conference is directed to both undergraduate and postgraduate students and is attended by junior students, senior students and the faculties of the Departments of Surgery and Medicine. Physicians in practice are cordially invited to attend.

Surgery Grand Rounds (Every Thursday 8:00-10:00 a.m., surgical wards)

All patients on the surgical service are seen on the wards. Participants then meet to review the X-rays and to thoroughly discuss the problems of the patients. These rounds are attended by junior students, senior students and the attending staff of surgeons. Physicians in practice are cordially invited to attend.

Surgery Seminar (Thursday 7:15 p.m., September through May, Conference Room)

Presentation and discussion of subjects and articles related to Surgery. Staff, residents, interns and senior students.

Urology

Professors L. W. Lee, *Chairman*, P. S. Adams; Associate Professors H. Kammandel, Malashock; Assistant Professor N. Davis; Clinical Assistant Professor Munger; Clinical Instructors Gilbert, Pfeifer.

The fundamental principles of this surgical specialty are taught in close coordination with the general surgical teaching program. The educational experience is geared to the type of knowledge which is of value to the general physician. Proficiency in a general knowledge of urology is accomplished by coordinated study, including lectures, clinical clerkship, dispensary and operative clinics. Emphasis at all times is on methods of diagnosis and management of the patient with urological disease.

Aside from the undergraduate teaching, the members of this department provide instruction to internes, surgical residents and nurses. They also provide specialized urological care to patients in the University Hospital and Douglas County Hospital. They conduct investigative research in various subjects of urological interest.

330. Fundamentals of Urology (1 hr weekly, total 16 hrs, I)

Lectures on diseases of the urogenital system.

Ward Clinics (2 hrs weekly when on Surgery Clerkship)

Students are given bedside ward clinics using patients at the University Hospital to illustrate major disease entities encountered in medical practice.

341. Dispensary (3 hrs weekly, total 12 hrs, SS, I, II, III)

One clinic is held each week to which students are assigned for practical experience in the diagnosis and treatment of urogenital diseases.

Senior Preceptorship Program

This extramural teaching program which permits the senior student to serve with an experienced practitioner of medicine has recently been changed. It is now an elective course available only during the three-month summer period. The student is permitted to choose a 4, 8 or 12 week period with the preceptor. It affords the student an opportunity to learn much of the art and science of medical practice. Preceptors have been selected by a Preceptorship Committee of the Faculty of the College, and are outstanding leaders in medical practice in the rural communities of Nebraska. Preceptors are regularly appointed members of the College of Medicine faculty, subject to the same rules and regulations as all other faculty members.

The student is assigned a preceptor whom he closely follows in all of his medical activities, including hospital work, office practice and home calls. Students are allowed to participate in the various aspects of medical practice as the preceptor feels they are capable of handling the work. The various aspects of general practice and community life are made known to the student during his preceptorship.

TRAINING COURSE FOR RADIOLOGICAL TECHNOLOGISTS

PAUL M. ST. AUBIN, M.D.

Professor of Radiology and Chairman of Department

HOWARD B. HUNT, M.A., M.D.

Professor of Radiology

RICHARD E. OGBORN, M.S., M.D.

*Associate Professor of Radiology in Nuclear Medicine;
Chief, Radioisotope Division Omaha V. A. Hospital*

AHMED MOHUIDDIN, B.S.

Instructor in Radiation Physics

JANET P. NIESS, B.S., R.T.

Assistant Instructor in Radiologic Technology and Chief Technologist

SHIRLEY WRIGHT, R.T.

Assistant Chief Radiographic Technician

CAROL DWORAK, B.S., R.T.

Radioisotope Technologist

CAROLYN BERG EPP, R.T.

Radiotherapy Technician

Organization.—Two programs for training of radiological technologists have been established by the Board of Regents in connection with the Department of Radiology, College of Medicine. The certification program open to qualified high school graduates prepares the candidate as a general X-ray technician. The B.S. in radiologic technology program, open to qualified fourth year collegiate students, provides additional didactic training and special competence in radioisotopic technology. Each program extends over a two-year period. The course has been approved by the American Registry of X-ray Technicians, sponsored by the American College of Radiology.

Students who have satisfactorily completed the course of training in radiological technology at the University of Nebraska College of Medicine, including a second year of experience, are accepted for examination by the American Registry of X-ray Technicians. A certificate in X-ray Technique is issued by the American Registry of X-ray Technicians upon successful completion of the examination.

Facilities for Instruction.—Ample opportunity for experience in making roentgenograms of patients is provided. During a period of 12 months, about 15,000 X-ray examinations are done at the University of Nebraska Hospital, including all usual and most special procedures. The radiographic work is supervised by the radiologists and the senior radiological technicians. Facilities are provided for experience in X-ray therapy, loading of radium applicators and radioisotopic procedures. All students and staff members are routinely monitored and carefully protected against exposure to radiation. The library of the College of Medicine is maintained in the hospital.

Requirements for Admission.—An applicant for admission to the course in radiological technology may be between 18 and 35 years of age and must be a graduate of an accredited high school. It is recommended that the preparatory work include English, chemistry, physics, biology,

typing, and secretarial work, although applicants are considered who do not present credits in all these subjects. One year of collegiate study including English, physics, zoology, chemistry, typing, shorthand, and secretarial work is recommended. In the case of those students who have satisfactorily completed 90 semester hours of college work, including English 6 hours, physics 8 hours, chemistry 12 hours, and biology 8 hours, the University of Nebraska College of Medicine will grant the degree of Bachelor of Science in Radiologic Technology upon satisfactory completion of prescribed courses including additional requirements in physiology, radioisotope physics, health physics, and intermediate radioisotope technology, and the additional year of approved preceptor training. With special permission of the Director, students with college credits of 75 semester hours who have completed all requirements in physics, chemistry, and biology may be registered as candidates for the B.S. in Radiologic Technology with a 15-hour deficiency in electives. Applicants should be in good health, with no disabilities. The application should be accompanied by a complete transcript of high school and college credits, a photograph, and the names and addresses of two people from whom references can be obtained. Admission is allowed in July and September. Only six students can be accepted annually. Applications should be sent to the Chairman of the Department of Radiology, University of Nebraska College of Medicine, 42nd Street and Dewey Avenue, Omaha 5, Nebraska. Application forms will be provided on request.

Fees and Expenses.—A tuition fee of \$120.00 for a resident student and \$200.00 for a nonresident is charged at the time of enrollment. This fee covers tuition, registration, student health, and diploma fees. Students must maintain themselves and provide their own uniforms. Cost of text books is about \$15.00. Board can be obtained in the vicinity of the hospital and rooms are available for a nominal fee at Conkling Hall on the campus. The student will ordinarily spend the required second year in training at the University of Nebraska Hospital. During the second year no tuition is charged and a nominal stipend is allowed.

Through the generosity of the W. K. Kellogg Foundation, loan funds are available for students taking training as technicians. Information concerning loans can be secured by applying to the Director.

General Information.—Students are accepted on a probationary basis during the first three months of enrollment. Students are in class or on duty in the Department of Radiology a total of 40 hours per week, which includes assignment on night call in rotation. A vacation of two weeks is allowed at the Christmas holiday or in the summer. Immunization against diphtheria, typhoid fever, and smallpox is advised.

Curriculum.—The course of training for students in radiological technology consists primarily of an apprenticeship, with lectures and demonstrations under the staff technicians, and of conferences with the radiologist. The apprenticeship comprises 90 per cent of the period of training. The student works with the technician in the making of all types of X-ray studies. Gradually-increasing independent responsibilities are given over to the student as experience increases. The student must become familiar with transcription of the reports of the radiologist covering the X-ray studies made of patients and his reports on patients treated with X-ray and radioactive agents.

The following courses are required of students in radiological technology. The courses in anatomy and medical science are provided through

the courtesy of the School of Nursing by the College of Medicine. Credits are expressed in semester hours.

(1) a. **ANATOMY.**—Lectures, class recitations, demonstrations, and laboratory work dealing with the structure of the human body. Preserved specimens and fresh animal specimens are used for study. 3 cr. hrs.

b. **PHYSIOLOGY.**—Lectures, demonstrations, and laboratory dealing with the functions of the human body. Required of B.S. candidates only. 3 cr. hrs.

(2) **MEDICAL SCIENCE.**—Causes and general features of disease processes. Lectures. 1 cr. hr.

(3) **PRINCIPLES OF RADIOLOGY.**—The general principles of radiation, technic, contrast media, and various diagnostic procedures are presented together with the basic principles of X-ray and radium therapy. Lectures include professional ethics. 1 cr. hr.

(4) **SECRETARIAL OFFICE PRACTICE.**—Supervised experience covering filing, cross indexing of diagnoses according to the Standard Nomenclature of Disease, vocabulary training, and transcription of radiological reports. 2 cr. hrs.

(5) a. **BASIC RADIATION PHYSICS.**—Production, characteristics, and control of radiation as applicable to radiographic technic and radiotherapy.

b. **RADIOISOTOPE PHYSICS.**—Theory of atomic and nuclear structure, concepts of matter, natural and artificial radioactivity. (Required of candidates for certification in radioisotope technology and for B.S. in radiologic technology.) 3 cr. hrs.

c. **HEALTH PHYSICS.**—Lectures, laboratory, and supervised training in monitoring and personnel safety measures, application of federal and other regulations, and radioisotope accountability. (Required of candidates for certification in radioisotope technology and for B.S. in radiologic technology.) 2 cr. hrs.

(6) a. **ELEMENTARY RADIOGRAPHIC TECHNOLOGY.**—Demonstration of anatomical positioning and adaptation of radiographic exposure to the more common radiographic examinations. 6 cr. hrs.

b. **INTERMEDIATE RADIOGRAPHIC TECHNOLOGY.**—Supervised application of above principles by the student in the conduct of routine radiographic procedures. 6 cr. hrs.

(7) **RADIOTHERAPEUTIC TECHNOLOGY.**—Demonstration of types of diseases to which radiotherapy is applicable and of their treatment by X-ray and radioactive agents. 3 cr. hrs.

(8) a. **BASIC RADIOISOTOPIC TECHNOLOGY.**—Supervised experience in instrumentation and laboratory procedures. 4 cr. hrs.

b. **INTERMEDIATE RADIOISOTOPIC TECHNOLOGY.**—Lectures, and supervised experience in special laboratory determinations. (Required of all candidates for certification in radioisotope technology and for B.S. in radiologic technology.) 10 cr. hrs.

c. **ADVANCED RADIOISOTOPIC TECHNOLOGY.**—Theory and application of advanced radioisotopic techniques in hospital and research laboratory procedures. (Required only of candidates for certification in radioisotope technology and B.S. in radiologic technology.) 4 cr. hrs.

(9) **NEUTRON ACTIVATION ANALYSIS.**—Lectures and supervised laboratories utilizing the Triga nuclear reactor, radiochemistry laboratory, and

multichannel analyser for microanalysis of trace elements. (Required of candidates for certification in radioisotopic technology.) 5 cr. hrs.

(10) a. **CHEMISTRY.**—Principles of inorganic and organic chemistry as applied to physiology, nutrition, and pharmacology. (Required only of B.S. candidates who have had less than 12 hours collegiate chemistry.) 4 cr. hrs.

b. **BIOCHEMISTRY.**—A study of chemical reactions occurring in the human body with consideration of laboratory tests of bodily functions. (Required of B.S. candidates only.) 4 cr. hrs.

(11) **FIRST AID.**—An elective course as prescribed by the American Red Cross with award of first aid certificate by the American Red Cross on satisfactory completion of course.

Opportunities.—There is an increasing demand for qualified technicians, primarily in the departments of radiology in hospitals and in the offices of doctors specializing in radiology. Radioisotopic technologists find opportunities both in clinical laboratories and in research laboratories. There is no opportunity for independent operation of a radiologic laboratory by the technologist since the use of radiation in the diagnosis and treatment of disease is legally the practice of medicine and in the interest of public welfare must be carried out under the supervision of a licensed physician.

TRAINING COURSE FOR MEDICAL TECHNOLOGISTS

Department of Pathology

JOHN R. SCHENKEN, B.S., M.D.

Professor of Pathology and Director

MORTON HOWARD KULESH, A.B., M.D.

Assistant Director and Associate Professor of Pathology

The Training Course for Medical Technologists at the University of Nebraska College of Medicine is designed to teach qualified students the theory and technics of laboratory procedure. An ever-increasing use of clinical laboratory determinations in the diagnosis and care of the patient has led to great opportunities for employment and advancement in the profession of medical technology. The qualified laboratory worker, or medical technologist, may find employment in a hospital laboratory, a physician's office, in clinics, in research, or in industrial and other applications of this specialized field. The medical technologist is an integral part of the medical "team" which includes physician, nurse, and other paramedical personnel working for more rapid, complete, and accurate diagnosis and treatment of the patient.

For proper understanding of clinical laboratory procedures, it is essential that an adequate background of scientific information be obtained before entering our program.

Organization.—The course for medical technologists has been established by authority of the Board of Regents, in connection with the Department of Pathology, College of Medicine. It has been accredited by the Council on Medical Education and Hospitals of the American Medical Association and the American Society of Clinical Pathologists as being equipped and organized to furnish adequate training in laboratory technic. Graduates of the Training Course for Medical Technologists are expected to take the examination for certification by the Registry of Medical Technologists maintained by the American Society of Clinical Pathologists.

Facilities for Instruction.—The course is given in the University Hospital, and facilities of the University of Nebraska College of Medicine are available for instruction. In addition, the facilities of affiliated hospitals may be used for training in medical technology. The development of this program is in progress, and further information regarding this affiliate hospital program may be obtained from the Director.

The University Hospital is organized primarily for teaching and is under the control of the Board of Regents, through the administration of the College of Medicine. It has a capacity of 202 beds, and patients are accepted from all over the state. All types of diseases are treated. More than 4,000 patients are admitted each year.

The laboratory of the University Dispensary is also used for instruction. More than 40,000 visits are made each year by patients of the University Dispensary. The treatment of patients in the hospital and dispensary is directed by the faculty of the College of Medicine. The laboratory work that is done includes all routine procedures and many specialized tests that are required for unusual diseases.

The Library of the College of Medicine is maintained in the hospital. These books and periodicals are available for study and for keeping in touch with current work in the field of laboratory diagnosis.

REQUIREMENTS FOR ADMISSION



High School.—Sixteen high school units are required for admission. They must include 3 units in English, 2 units in one foreign language (ancient or modern), 2 units in mathematics (1 each of algebra and geometry or an equivalent), and 1 in science (biology, botany, chemistry, physics or zoology).

College or University.—To insure adequate background and training for entering a recognized course in medical technology, the following requirements have been established in accordance with the Registry of Medical Technologists:

BIOLOGIC SCIENCE.—Sixteen semester hours. This must include one full academic year (two semesters) of general biology and/or zoology, including lecture and laboratory. A minimum of 3 semester hours of bacteriology is required, if offered at the college where preliminary work is taken. If bacteriology is not available, other branches of biologic science may be substituted, with permission of the Director.

CHEMISTRY.—Sixteen semester hours, including lecture and laboratory. This must include at least two semesters of general inorganic chemistry, lecture and laboratory; this may also include qualitative analysis. At least 4 semester hours of organic chemistry, including laboratory, must be completed. A course in quantitative analysis is highly recommended.

NOTE: Students taking their preliminary college work at The University of Nebraska in Lincoln, who are enrolled in Chemistry 3 and 6 in lieu of Chemistry 1 and 6, may substitute these 3- and 4-hour courses for the 5-hour courses. For such students, the total number of required hours of chemistry will be 13 instead of 16 as listed above. A course in organic chemistry is required, as stated above.

MATHEMATICS.—A minimum of one semester of college mathematics is required.

ENGLISH.—A minimum of 6 semester hours of English is required.

PHYSICS.—A lecture and laboratory course in physics is recommended.

ELECTIVES.—Sufficient hours to total 90 semester hours of college credit. Emphasis is placed upon obtaining as broad a general educational background as possible, in addition to the required courses listed above.

Since the student has entered the Training Course for Medical Technologists with specific course requirements completed and a minimum of 90 semester hours of college work, he is granted the degree of Bachelor of Science in Medical Technology when he has successfully completed the Training Course. The degree is granted by the University of Nebraska College of Medicine.

Loan Funds and Scholarships.—Loan funds and limited scholarships are available. The W. K. Kellogg Foundation has loan funds available through the University of Nebraska College of Medicine for students in this program. The Frieda M. Oltmanns Loan Fund for Student Medical Technologists has funds for students at or beyond the second year at the University of Nebraska in Lincoln or in the Training Course in Omaha. This fund is administered by the Nebraska Society of Medical Technologists. Further information regarding loans and scholarships can be obtained from the Director of the Training Course for Medical Technologists.

Starting Dates.—Students begin their training during the summer months on a somewhat staggered schedule.

Applications.—Forms for application can be obtained from the Director. Transcripts of both high school and college work, accompanied by a small recent photograph or snapshot, should be submitted with the completed forms.

Enrollment in the Training Course is limited. Applications for the year in which the student expects to begin training must be received before January 1st of that year.

Fees and Expenses.—A tuition fee of \$120 a year for a resident student and \$200 a year for a nonresident student is charged at the time of enrollment. This fee covers tuition, registration, student health and diploma fees. Other than uniform laundry, students are responsible for their own maintenance, uniforms, laundry, etc. Housing facilities are available on the campus. Adequate facilities for lodging and/or board are available near the campus. Allowance should be made for the purchase of books.

Plan of Instruction.—The course of training is 12 months in length. *No part of the course is offered separately.* Lectures covering background material are taken with the students of the College of Medicine. Other lectures are designed especially for the needs of the medical technologists. Conferences are held at frequent intervals for consideration of technics, their relation to disease processes, and possible sources of error. Oral and written examinations are given at intervals. Demonstrations are used to introduce new subject matter, to emphasize important points, and to familiarize the student with unusual problems.

The credit hours are arranged as follows:

Introduction to Medical Science	1	Biochemistry Laboratory	3
Microbiology	4	Hematology	3
Microbiology Laboratory	3	Hematology Laboratory	3
Parasitology	1	Histologic Technic	3
Serology	3	Blood Bank Technic.....	2
Biochemistry	3	Special determinations	3
Method in Chemistry	3		

The following formally arranged lecture courses are given:

INTRODUCTION TO MEDICAL SCIENCE.—This course covers a general survey of disease processes and their effect upon the individual. In these tests the relation of laboratory determinations and alterations associated with disease states is stressed.

MEDICAL MICROBIOLOGY.—This course is a comprehensive study of the medical aspects of bacteriology, immunology, mycology, parasitology, and urology.

BACTERIOLOGY AND SEROLOGY LABORATORY PROBLEMS.—Particular attention is given to laboratory technics, their control, and interpretation.

HISTOLOGIC TECHNIC.—A series of lectures covering the basic principles of processing tissue and other materials for microscopic examination is given.

BIOCHEMISTRY.—This course embodies a study of the chemical reactions occurring within the human body. Particular attention is given to the way in which laboratory tests can give information about normal and abnormal chemical functions in the body.

HEMATOLOGY AND CLINICAL LABORATORY TECHNICS.—This course covers the general principles of blood examination for alterations in the cellular elements, including a discussion of abnormal conditions which are reflected in the laboratory results. In addition, the general aspects of urin-

alysis, gastric analysis, basal metabolic rates, and electrocardiography are discussed.

SEMINARS.—Periodic seminars are held during which time pertinent problems regarding the laboratory are discussed. Periodic reviews of the recent literature are conducted.

In addition to the formal lecture material, the student is assigned to various services for practice laboratory experience:

CHEMISTRY.—This service includes examination of blood and other body materials for chemical constituents. Such tests usually are quantitative. The student learns the use of proper equipment and the application of careful technics to the performance of a wide variety of tests.

HEMATOLOGY.—The various tests for enumeration and detection of abnormality of the formed elements of the blood, and the tests for alterations in the coagulation mechanism of the blood are done.

BACTERIOLOGY, SEROLOGY AND PARASITOLOGY.—The identification of microorganisms, particularly pathogenic, by morphologic and cultural characteristics is undertaken in bacteriology. Serology involves primarily immunologic procedures in laboratory tests. Parasitology includes the study of technics for isolation and identification of small animal forms capable of causing disease in man. Adequate demonstration material is maintained in the laboratory. This section of training is under the direction and supervision of the Department of Microbiology of the College of Medicine.

BLOOD BANK TECHNIC.—The student is instructed in methods for the handling and storage of blood, as well as preparation of blood for transfusion. Methods for detection of incompatibilities between bloods are emphasized.

HISTOLOGIC TECHNIC.—The student becomes familiar with the methods for processing tissues for microscopic examination. A variety of methods is presented.

RADIOISOTOPE TECHNIC.—Lecture and laboratory instruction in this field is offered.

MISCELLANEOUS.—The student performs routine examinations of urine, gastric contents, and other body fluids. In addition, the performance of basal metabolic rate determinations is accomplished.

**COLLEGES, SCHOOLS, AND DIVISIONS
OF
THE UNIVERSITY OF NEBRASKA**

Junior Division

Supervises the orientation, advising, and registration of freshmen.

College of Agriculture

Leading to the degree of Bachelor of Science in Agriculture.

In addition to the resident teaching division, the College of Agriculture is comprised of the Agricultural Experiment Station with headquarters on the Lincoln campus and at outlying stations at North Platte, Scottsbluff, Alliance, Crawford, Mead, and Concord; the Agricultural Extension Service with headquarters in Lincoln, and county or district extension offices at 83 locations in the state; and the University of Nebraska High School of Agriculture at Curtis.

School of Home Economics

Leading to the degree of Bachelor of Science in Home Economics.

College of Arts and Sciences

Leading to the degrees of Bachelor of Arts, Bachelor of Fine Arts, Bachelor of Music, Bachelor of Science.

School of Fine Arts

Leading to the degrees of Bachelor of Music, Bachelor of Fine Arts, Bachelor of Fine Arts in Education, Bachelor of Music in Education, Master of Music—in the appropriate colleges.

School of Journalism

Leading to the degrees of Bachelor of Arts, Bachelor of Science in Agriculture, Bachelor of Science in Business Administration, Bachelor of Arts in Education—in the appropriate colleges—and to a Professional Certificate in Journalism.

College of Business Administration

Leading to the degree of Bachelor of Science in Business Administration.

College of Dentistry

Leading to the degree of Doctor of Dental Surgery.

College of Engineering and Architecture

Leading to the degrees of Bachelor of Architecture, Bachelor of Science in Agricultural Engineering, Bachelor of Science in Chemical Engineering, Bachelor of Science in Civil Engineering, Bachelor of Science in Electrical Engineering, Bachelor of Science in Mechanical Engineering; and the professional degrees of Agricultural Engineer, Chemical Engineer, Civil Engineer, Electrical Engineer, Mechanical Engineer, and Architect.

Supervises Nebraska Engineering Experiment Station, Lincoln.

Graduate College

Leading to the degrees of Doctor of Philosophy, Master of Arts, Master of Science, Master of Architecture, Master of Fine Arts, Master of Music, Master of Science in Dentistry, Master of Physical Education, Master in Psychiatric Nursing, Master in Psychiatric Occupational Therapy, and Master of Social Work.

Graduate School of Social Work

Leading to the degree of Master of Social Work.

College of Law

Leading to the degrees of Bachelor of Science in Law and Bachelor of Laws.

College of Medicine

Leading to the degrees of Doctor of Medicine, Bachelor of Science in Medicine, Bachelor of Science in Medical Technology, Bachelor of Science in Radiological Technology, certificate in Medical Technology, and certificate in Radiologic Technic.

School of Nursing

Leading to the degree of Bachelor of Science in Nursing.

College of Pharmacy

Leading to the degree of Bachelor of Science in Pharmacy.

Teachers College

Leading to the degrees of Bachelor of Science in Education, Bachelor of Arts in Education, Bachelor of Fine Arts in Education, Bachelor of Music in Education, Master of Education, Doctor of Education.

Supervises University High School, Lincoln.

University Extension Division

Summer Sessions

Separate bulletins or information concerning any college, school or division may be obtained free of charge by addressing the Registrar, University of Nebraska, Lincoln 8, Nebraska

