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for Dental Hygienists
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School of Dentistry and Course For Dental Hygienists

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SCHOOL OF DENTISTRY

GENERAL INFORMATION

The School of Dentistry is located in the Medical Sciences Building at Washington Avenue and Union Street Southeast, on the Minneapolis Campus of the University of Minnesota. Its students are privileged to enjoy all the advantages which come from participation in the activities of a university composed of academic, scientific, and professional schools and colleges.

The Medical Sciences Building is unsurpassed in its arrangement and facilities for the teaching of dentistry. The lecture rooms, laboratories, and infirmary are furnished completely in all details with the most modern equipment that has been developed for the teaching of the science and practice of dentistry.

These facilities, together with a highly specialized teaching staff both in the medical science subjects and in dentistry, enable the student to enter upon the study of dentistry under very favorable conditions. Instruction is given by lectures, laboratory courses, demonstrations, and by clinical practice in the infirmary.

The four-year course in dentistry leading to the degree of doctor of dental surgery is open to both men and women. A pre-dental course of two years of college work in arts and sciences lays the foundation for the required professional education. The importance of dentistry as a branch of the healing art and the rapid advances made in recent years have produced marked changes in the length and content of the courses of study contained in the present curriculum. Throughout the entire course the teaching is closely integrated with the medical sciences laboratories and the clinical and hospital facilities of the Medical School.

The School of Dentistry is no longer operating on the accelerated program and a freshman class is admitted only once a year, in the fall.

Application Procedure

Application forms may be secured from the Office of Admissions and Records, University of Minnesota, Minneapolis, and applications from nonresidents of Minnesota must be accompanied by a \$5 credential examination fee. This fee is not refundable, but if the applicant enrolls within one year following the date of application, the \$5 will be credited to his tuition for the first quarter. Remittance should be in the form of check, bank draft, or money order, payable to the University of Minnesota. *Do not send cash.*

Applicants must present evidence not only that they have completed the courses necessary to fulfill the entrance requirements but also that their college work and general fitness for dentistry is of such character as to give promise that they have the ability to do work of high quality in the dental course.

Requirements for Admission

Requirements for admission to the School of Dentistry at the University of Minnesota are two years (90 quarter hours or 60 semester hours) in an accredited college of liberal arts. Quality credits may not be applied to decrease the ninety hours. This work must include one year of English, one year of General Inorganic Chemistry and Semimicro Qualitative Analysis, Organic Chemistry (aliphatic and aromatic) minimum of one-half year, one year of Zoology, and one year of Physics.

The science courses must include both lecture and laboratory work. Certain other restrictions apply to individuals resident outside of Minnesota. Persons interested in applying are advised to see the current *Bulletin of General Information* of the University for additional information.

At the University of Minnesota the preidental requirements are met by the following two-year course of study, provided high school chemistry, algebra, and plane geometry are presented for admission (if these are not presented, Chemistry 1-2-3 is required instead of Chemistry 4-5) :

1. Zoology 1-2-3, ten quarter credits.
2. Chemistry 4-5, 11, Organic 61-62, twenty quarter credits.
3. Physics 1a-2a-3a, twelve quarter credits.
4. Freshman English A-B-C, fifteen quarter credits; or Freshman Composition 4-5-6, nine quarter credits.
5. Latin or a modern language (high school or college), drawing, economics, history, political science, psychology, and sociology are recommended as electives to make up a total of 90 quarter credits.

Those applicants whose preidental work has been taken at institutions other than the University of Minnesota must present to the Board of Admissions certified credentials of both preparatory and college work showing the subjects completed, credits, grades, and a certificate of honorable dismissal from each college attended.

Seven-Year Course in Arts and Dentistry Leading to the Degrees of Bachelor of Arts and Doctor of Dental Surgery

During the first three years of this course, the student does his work in the College of Science, Literature, and the Arts, subject to the regulations of the college, and must secure at least 135 credits, with a scholarship average of C for all courses taken. At least 30 credits must be in Senior College courses. He must complete the requirements for admission to the Senior College (see *Bulletin of Science, Literature, and the Arts*) and also the work in chemistry, physics, and zoology prescribed for admission to the School of Dentistry.

During his third year, the student elects work in this college, subject to the approval of the assistant dean for the Senior College. The work of the freshman and sophomore years in the School of Dentistry, exclusive of technical and practical work, when completed according to the standards required by that school, counts as the equivalent of the fourth year (45 credits of the Arts course).

Admission to Advanced Standing

Students from other dental colleges whose standards are fully equivalent to those of this institution may be received into advanced classes. Such students must make formal application on the blank provided, and must submit credentials covering preidental and dental studies. Such credentials must show that the student has completed the required preidental subjects and has maintained the standard of scholarship required of students of this school.

Notebooks and other evidences of laboratory work must be presented. The amount of credit to be granted a student from another school is decided by the heads of the respective departments in conference with the Class Committee. Subject credit (but not legal time credit) may be given for studies pursued other than in dental schools.

Students desiring advanced standing in the University of Minnesota should have an official transcript of their record sent to the Office of Admissions and Records by the registrar of the college previously attended.

Graduates of foreign dental schools (except Canadian schools that are members of the American Association of Dental Schools) who wish to complete the requirements for the degree of doctor of dental surgery must present credentials showing the completion of the predental subjects for admission and then plan to spend two academic years in the School of Dentistry.

Requirements for Graduation

A candidate for the degree of doctor of dental surgery, after satisfying all the requirements for admission to the School of Dentistry, must have complied with all the rules and regulations and completed the required curriculum and must have been recommended by the faculty of the School of Dentistry for the degree of doctor of dental surgery.

Fees

Tuition fee (per quarter)	
Residents of Minnesota	\$ 75.00
Nonresidents	120.00
Credit hour tuition fee (unclassified students, auditors, and others carrying less than full work):	
Residents of Minnesota	6.25
Nonresidents	10.00
Matriculation deposit* (first quarter only)	5.00
Incidental fee‡ (per quarter)	11.95
Graduation fee	7.50

Special fees:

Credential examination fee (applicable to nonresidents)	5.00
Examination on subjects taken out of class§	5.00

(No fee for such examination on first entering the University, if taken within the first six weeks.)

Laboratory fees for individual courses. The amounts are specified in the course announcements.

Privilege Fees—The fee for the privilege of late registrations or late payment of fees is \$2 through the third day of classes. On the fourth day the fee is \$2.50 and then increases 50 cents per day to a maximum of \$5. The fee for late change of registration is \$2.

Dental Equipment and Books

Students are required to provide themselves with the instruments and textbooks specified in the *Official List* which may be secured upon request.

Dental instruments and equipment are not offered for sale by the University but may be purchased from regular dealers in dental supplies located near the campus. Books may be obtained from the Professional Colleges Bookstore in the Main Engineering Building or from nearby dealers.

* Such charges as may be incurred for lockers, library penalties, laboratory breakage, etc. will be deducted from the amount of this deposit and the balance will be refunded by mail upon graduation or after the beginning of the first quarter the student fails to return to the University.

‡ An incidental fee of \$11.95 a quarter is charged each student for which the student receives privileges such as the Coffman Memorial Union, the Health Service, the Testing Bureau, the *Minnesota Daily* including the *Official Daily Bulletin*, and the university post-office service.

§ Such an examination may be taken only upon approval of the appropriate committee.

The approximate costs of dental instruments and books are as follows:

	Instruments	Books
Freshman year (estimate)	\$265.00	\$49.00
Sophomore year (estimate)	398.00	38.00
Junior year (estimate)	105.00	80.00
Senior year (estimate)		6.00

Loan Funds

The University of Minnesota has numerous loan funds. They are restricted in their distribution to individuals meeting certain requirements. A loan usually cannot be obtained before two quarters of attendance at the University, during which time the student will have the opportunity to demonstrate his ability and integrity. The only security for the loans made to students is the character of the applicant and his ability to do college work. Application for loans may be made to the Bureau of Student Loans and Scholarships, 207 Eddy Hall, a department under the Office of the Dean of Students.

Self-Support

The University Employment Bureau, Room 17, Administration Building, efficiently assists students who find it necessary to earn part or all of their expenses. However, the regular course in dentistry is a full program and students find it difficult to devote many hours a week to outside employment.

Students' Health Service

Through the Students' Health Service the University makes available to students medical care, medical examinations, and health consultations. General service is provided free of charge, but for services which are specialized and individual in character, such as dentistry, X-ray, board and laundry in the student hospital, outpatient calls, minor surgery, etc., special fees are charged. No student, however, will be denied service because of inability to pay these fees. Major surgical operations or prolonged medical care ordinarily is secured through private physicians selected by the students or their families, but, if necessary, operations may be arranged through the Students' Health Service upon the established basis.

Library

The University of Minnesota Library is one of the finest libraries in existence today. It includes about 1,000,000 volumes and many periodicals and pamphlets, and in scope takes in every subject in the university curriculum. Its large, airy reading rooms provide an excellent place to study.

The Biological-Medical Room occupies the north end of the second floor of the library and will accommodate 216 readers. It includes the former college and departmental libraries in Animal Biology (Zoology), Botany, Dentistry, Medicine, Pediatrics, and much of Pharmacy. Reference books, texts, and treatises of various kinds are kept on open shelves in this room. This section includes all available literature on dentistry in book and periodical form and additional volumes are purchased as soon as they have been recommended by the Library Committee of the faculty in dentistry. These library facilities offer the student an excellent opportunity to secure a knowledge of science and practice of dentistry.

Also, in the Medical Sciences Building in connection with the offices of the various divisions adjacent to lecture rooms, laboratories, and the clinic of the School of Dentistry are located reference reading books and periodicals for the use of students.

Coffman Memorial Union

The Coffman Memorial Union places Minnesota in the forefront of American universities as to the recreational facilities which it offers to students. The student post office, cafeterias and lunchrooms, committee dining rooms, lounges for men and women, game rooms, bowling alleys, pool and billiard rooms, offices for student organizations, barber shop, beauty parlor, library, art room, and spacious ball-rooms are among the features that make the building the popular center of campus life.

Honor Fraternity

Omicron Kappa Upsilon, the national honor dental fraternity, is represented at Minnesota by the Beta Beta Chapter. Students are elected to membership in the senior year by the faculty on the basis of scholarship, character, and conduct during their course. Not more than 12 per cent of the class is eligible.

Description of Courses

ANATOMY

59. Systematic Anatomy. A comprehensive treatment of the various organ systems of the human body. Lectures, recitations and laboratory work. 120 hours. 6 credits. Offered to freshmen. Prerequisite: Zoology 1-2-3. Enrolment limited to 100 students. Hartmann and assistants.
102. Anatomy of the Head and Neck. Detailed dissection of the human head and neck with correlative treatment of the upper extremity. 120 hours. 6 credits. Offered to freshmen. Prerequisites: Zoology 1-2-3, Anatomy 59. Enrolment limited to 100 students. Hartmann and assistants.
- 105f.‡ Microscopic Anatomy. Minute structure and development of the tissues and organs of the body including the nervous system, with special emphasis upon the teeth and digestive tract. Lectures, recitations, and laboratory work. 160 hours. 9 credits. Offered to sophomores. Prerequisites: Zoology 1-2-3, Anatomy 59. Enrolment limited to 100 students. Rasmussen, Campbell, and assistants.

BACTERIOLOGY AND IMMUNOLOGY

- 100s.‡ Dental Bacteriology. Morphology; methods of staining; culture media; methods of identification; principles of sterilization and disinfection; antibiotics; bacteria and disease; pathogenic bacteria; fundamentals of immunology; the oral flora; bacteriology of oral infections, dental caries, alveolar abscess, and periodontal infection; the relationship of oral infections to other focal and general infections. 132 hours. 6 cred. DeKruif, McBride.

DENTISTRY

DIVISION OF CROWN AND BRIDGE WORK

- 60-61-62. Crown and Bridge Laboratory. Lectures, demonstrations and laboratory work, including exercises on casting, free-hand and investment soldering and the construction of typical cases such as: a lower hygienic bridge, an upper posterior bridge, an upper anterior bridge and a Richmond crown. A lecture immediately precedes each new laboratory technic and an illustrated syllabus aids the students in carrying out each piece of work. 320 laboratory and lecture hours. 12 credits. Prerequisite: Oral Anatomy 50-51-52. Thom and staff.
- 80-81-82. Crown and Bridge Clinic. A clinical course composed of demonstrations and clinical practice. This course is designed to orient the student into infirmary practice. Instruction is given in the diagnosis, designing and construction of the simpler cases. 90 clinical hours. 3 credits. Prerequisite: Course 60-61-62. Thom and staff.
- 80s. Crown and Bridge Lecture. A lecture course which includes the history of crown and bridge work, interpretation and objectives of the course, definitions and nomenclature, aims of the service, diagnosis, a consideration of types of abutments, retainers, and pontics. 10 lecture hours. 1 credit. Prerequisite: Course 60-61-62. Thom.

‡ Microscope required. Students (except medical) may obtain use of microscope by purchasing two \$3 microscope cards from bursar.

90. Crown and Bridge Clinic. An advanced clinical course. Demonstrations and clinical practice. This course is a continuation of Course 80-81-82 and includes the teaching of the use of porcelain and acrylic resins in crown and bridge prosthesis together with instruction in the diagnosis, designing and construction of the more complicated cases. 180 clinical hours. 6 credits. Prerequisite: Course 80-81-82. Thom and staff.
- 90f. Crown and Bridge Lecture. Ceramics and acrylic resins in relation to the problem of esthetics in clinical restorative dentistry. A course of illustrated lectures covering the physical and chemical properties, the indications for use, and the manipulation of porcelain and plastics in their practical application. 10 lecture hours. 1 credit. Prerequisite: Course 80-81-82. Yock.
- 91w. Crown and Bridge Lectures. An advanced lecture course. This course is designed to teach the student to diagnose and construct the more difficult and complicated cases. Emphasis is placed on complete mouth rehabilitation and the restoration of lost vertical dimension. The lectures include a discussion of the various technics which are in common use by the dental profession. 10 lecture hours. 1 credit. Prerequisite: Course 80-81-82. Thom.

DIVISION OF DENTURE PROSTHESIS

- 50-51-52. Prosthetics Laboratory. A course of lectures, demonstrations, examinations, and laboratory instruction covering the various phases of complete and partial denture prosthesis, materials used, their properties and manipulations; fundamental principles of denture construction including retention, occlusion, and esthetics; instruments and terminology used in dental prosthesis. 270 laboratory and lecture hours. 11 credits. Hall, Listiak, and assistants.
60. Denture Prosthesis. A course of lectures and recitations on cast partial denture prosthesis. It includes the construction of a technic cast partial denture by each member of the class. 70 lecture and laboratory hours. 3 credits. Prerequisite: Prosthetics 50-51-52. Listiak, Hall, and staff.
62. Denture Prosthesis. A course of clinical demonstrations in complete denture prosthesis and practice by students in taking of impressions and making cases in various types of materials. 40 hours. 2 credits. Prerequisite: Course 60.
- 80-81-82. Denture Prosthesis Clinic. A course in the clinical practice of the various types of artificial denture service, including complete denture and partial denture construction for patients. 270 clinic and laboratory hours. 9 credits. Prerequisite: Courses 60, 62.
- 81-82. Denture Prosthesis Lectures. A course of lectures on clinical complete denture prosthesis presenting accumulated knowledge on subject with a discussion of various clinical procedures and problems associated with practical denture service. 20 hours. 2 credits.
90. Denture Prosthesis Lectures. Lecture course on clinical partial denture prosthesis. Presentation of accumulated knowledge on this subject and discussion of various phases and problems of partial denture service. 10 hours. 1 credit. Prerequisite: Lecture course 81-82.
- 90-91-92. Denture Prosthesis Clinic. A course in clinical practice in denture prosthesis continuing the work of the junior year. It includes the construction of immediate complete denture and cast partials for patients; also presents denture service for abnormal conditions. 180 hours. Clinic and laboratory. 6 credits. Prerequisite: Course 80-81-82.

DIVISION OF PEDODONTICS

62. Pedodontics. Lectures, demonstrations and laboratory work. A technic course in the principles of cavity preparation, insertion of amalgam fillings in deciduous teeth. Construction of space-maintainers. 30 lecture and laboratory hours. Prerequisite: Course 82. 1 credit. Wittich and staff.
80. Pedodontics. A course of lectures including diagnosis, treatment planning, comparative anatomy of deciduous and permanent teeth, growth and development. 10 lecture hours. 1 credit. Wittich.
82. Pedodontics. Special group demonstrations to students. Clinical course in cavity preparation and insertion of fillings in deciduous and permanent teeth. 30 clinical hours. 1 credit. Wittich and staff.
90. Pedodontics. A course of lectures including treatment of pulps of deciduous teeth, restoration of fractured permanent anterior teeth, space maintainers, topical application of sodium fluoride, and caries prevention. 10 lectures. 1 credit. Wittich.
- 90,91. Pedodontics. Clinical training in filling deciduous and permanent teeth, treatment of pulps of deciduous teeth, restoration of fractured permanent anterior teeth, construction of space-maintainers and topical application of sodium fluoride. 60 clinical hours. 2 credits. Wittich and staff.

DIVISION OF OPERATIVE DENTISTRY

- 61,62. Operative Dentistry. A technic course on the principles of cavity preparation, manipulation of filling materials of both the plastic and nonplastic types, and the adjuncts used therewith. Laboratory procedures are executed on a typodont and green teeth. A series of twenty lectures are integrated with the laboratory technics. Upon the satisfactory completion of the technic work, the student progresses into clinical operative dentistry. 200 hours. 8 credits. Prerequisite: Oral Anatomy 50-51-52. Simon, Thiers, and staff.
- 80,81,82. Operative Dentistry Lectures. A series of 30 lectures is offered to junior students covering clinical procedures in the care of patients and an introduction to the principles of pulpal therapy. 30 hours. 3 credits. Simon and staff.
- 80,81,82. Operative Dentistry Clinic. Each student is assigned patients in the infirmary for the practice of operative dentistry under supervision of the staff. Demonstration clinics are offered in chair position for operating, methods of maintaining a dry field, root canal therapy, and the insertion of amalgam restorations. 330 hours. 11 credits. Simon and staff.
- 90,91. Operative Dentistry Lectures. An advanced series of lectures covering intricate details of operative dentistry with emphasis on refinements of procedures as developed in research laboratories. 20 hours. 2 credits. Simon and staff.
- 90,91,92. Operative Dentistry Clinic. Upon satisfactory progress in clinical operative dentistry during the junior years, students continue throughout the senior year gaining practical experience with all types of filling materials under the supervision of the staff. Demonstration clinics are offered in the technical procedures of placing inlay and foil restorations. Practical examinations are held during final week. 270 hours. 9 credits. Simon and staff.

DIVISION OF ORAL ANATOMY

- 50-51-52. Oral Anatomy. A course of lectures, quizzes, examinations, and laboratory instruction. Lectures: dental nomenclature with special attention to definition, spelling, derivation, combining, and application of terms used in the various divisions of dentistry; a detailed study of all deciduous and permanent teeth

including calcification, eruption, decalcification and shedding, tooth form, function, stresses, all phases of occlusion; surrounding and investing tissues; pulp cavities and anomalies. Laboratory instruction projects included are outline drawings, plastine modeling, wax carvings individually and as an anatomical unit, sectioning of teeth. 150 laboratory and lecture hours. 7 credits. Hall and assistants.

DIVISION OF ORAL DIAGNOSIS AND RADIOLOGY

62. Dental Radiology. A series of lectures and demonstrations on the application of Roentgen rays for dental diagnostic purposes. The course includes the electrophysics of the apparatus, positioning of the films, angulation of the machine, and processing. 10 lecture hours. 1 credit. Williams.
80. Oral Diagnosis. A lecture course covering a study of oral examinations, methods of investigation, and the recording of clinical data. 10 lecture hours. 1 credit. Simon.
81. Oral Medicine. A study of the oral manifestations of systemic and local diseases. Small group conferences on laboratory procedures for diagnostic purposes will be arranged during the winter and spring quarters for junior students. 10 lecture hours. 1 credit. Wahlquist.
82. Radiology Clerkship. During the junior year the student will serve a regular clerkship in the department of radiology, taking, processing, and mounting dental X rays. Concurrent with the clerkship there will be arranged a conference course for small groups of students in which the radiograph of clinical patients are read and interpreted. 30 clinical hours. 1 credit. Williams.
82. Oral Medicine. A study of the general diagnosis and methods of investigation related to the clinical and fundamental problems of medicine and dentistry. 10 lecture hours. 1 credit. Wahlquist.
91. Oral Diagnosis Clerkship and Seminar. The student will serve as a clerk of admissions in the Division of Oral Diagnosis. Hours arranged. Mitchell.

DIVISION OF ORAL HYGIENE AND PERIODONTIA

61. Dental Writing—Dental Health. Lectures covering two series of topics: (a) use of dental libraries and writing of dental papers, (b) health and diseases of the dental supporting structures, including oral hygiene technique. 10 lecture hours. 1 credit. Radusch.
81. Periodontia Lectures. Deals with the causes, treatment, and prevention of gingivitis, dental periclasia, and other diseases of the investing tissues. 10 hours. 1 credit. Radusch, Schaffer, Peterson.
- 81-82. Periodontia Clinic. Clinical practices in the treatment of diseases affecting the investing tissues of the teeth. 60 hours. 2 credits. Radusch, Schaffer, Peterson.
90. Periodontia Lectures. A continuation of the previous lectures with emphasis on occlusion and diseases of supporting tissues as related to systemic complications. 10 hours. 1 credit. Radusch, Schaffer, Peterson.
90. Periodontia Clinic. Clinical treatment of periodontal disease. 30 hours. 1 credit. Radusch, Schaffer, Peterson.

DIVISION OF ORAL HISTOLOGY AND PATHOLOGY

80. Oral Histology and Pathology. A course of lectures and laboratory covering the subject of the histology of the teeth and related oral tissues. Adequate embryologic considerations are included. Also, lectures dealing with the special pathology of the oral region. Emphasis is placed on the relation of local patho-

logic findings to systemic conditions and to general pathology. The course is supplemented by outside reading and thesis, by laboratory studies and drawings, and by clinical demonstrations. 60 lecture hours. 4 credits. Prerequisites: Bacteriology and Pathology. Mitchell.

DIVISION OF ORAL SURGERY

82. Oral Surgery (Anesthesia). Lecture course on local and general anesthesia. 10 hours. 1 credit. Clark and staff.
83. Oral Surgery (Principles of Exodontia). Lecture course introducing the student to the principles and practice of minor oral surgery of the oral cavity. Indications for tooth removal, technic of tooth extraction, precautions against accident, and attention to postoperative care. 10 hours. 1 credit. Clark and staff.
- 90,91,92. Oral Surgery. Lecture course in jaw fractures, tumors, infections, cysts, congenital malformations, functional diseases, and other surgical conditions of the oral cavity and associated structures. 30 hours. 3 credits. Clark and staff.
93. Oral Surgery (Advanced Exodontia). Lecture course in technic of removal of impacted and unerupted teeth, alveolectomy, curettage of granulomas, and tooth removals in children and the aged. Special considerations in removal of teeth under gas anesthesia. 10 hours. 1 credit. Clark and staff.
94. Oral Surgery and Hospital Clinics. In the junior year 5 periods are spent in observation and assisting only. In the senior year 16 periods are devoted to actual practice as well as observation of all types of ambulatory oral surgical conditions in the School of Dentistry; 8 periods are devoted to demonstrations, observation, clinics, and conferences in the University Hospitals; and 4 periods are spent in the Admissions Clinic of the University Hospitals doing oral examinations on the patients and observing the taking of histories and physicals by the medical clerks. Total of 90 hours. 3 credits. Clark and staff.

DIVISION OF ORTHODONTIA

- 81-82. Orthodontics Lectures. A course on the principles basic to orthodontic diagnosis. 20 hours. 2 credits. Speidel.
- 90-91-92. Orthodontics Lectures. Principles and procedures in preventive and corrective orthodontic treatment. Analysis of cases and treatment planning. 30 hours. 3 credits. Speidel and staff.
- 91-92. Orthodontic Clinic. Clinical demonstrations and conferences biweekly throughout the year. 45 hours. 2 credits. Speidel and staff.

METALLOGRAPHY

159. Dental Metallography. Lectures, recitations, and demonstrations, taking up the most important metals with special reference to those used in dentistry and the study of dental alloys from the standpoint of metallography. 20 hours. 2 credits. Dowdell, Jerabek, Mackay.

PATHOLOGY

- 105.‡ General and Special Pathology. Circulatory disturbances, metabolic change in cells and tissues, pigment deposits, inflammations and tumors. Pathology of selected diseases, tumors, and lesions affecting the mouth and dental structures. Exercise in gross and microscopic diagnosis. 140 hours. 8 credits. Prerequisites: Anatomy 59, 61. Clawson and assistants.

‡ Microscope required. Students (except medical) may obtain use of microscope by purchasing \$6 microscope card from bursar.

PHARMACOLOGY

101. Introduction to Pharmacology. Prerequisites: Physiological Chemistry and Physiology. 20 hours. 2 credits. Bieter, Wright, and assistants.
105. General and Experimental Pharmacology. A detailed lecture and laboratory study of important drugs. Prerequisite: Pharmacology 101. 100 hours. 6 credits. Bieter, Wright, and assistants.
106. General Pharmacology. A lecture continuation of Pharmacology 105. 20 hours. 2 credits. Bieter, Wright, and assistants.
108. Prescription Writing. Prerequisites: Pharmacology 101, 105, and 106. 10 hours. 1 credit. Wright.

PHYSIOLOGY

101. Human Physiology. Course in the principles of physiology for dental students and others. Physiology of cells, muscle, nerve, central nervous system, senses, blood, circulation, respiration, digestion, metabolism, endocrines, excretion. 154 hours. 10 credits. Prerequisites: Zoology and Organic Chemistry 57, 100, or 104, 105. Staff.

PHYSIOLOGICAL CHEMISTRY

- 104.†† Physiological Chemistry. For freshman dental students and others. Prerequisite: organic chemistry. 55 hours. 5 credits. Armstrong, Barnum, Glick, Cohen, Carr.
- 105.†† Physiological Chemistry. For freshman dental students and others. Prerequisite: Physiological Chemistry 104. 100 hours. 6 credits. Armstrong, Barnum, Glick, Cohen, Zbarsky, Carr.

CONTINUATION COURSE STUDIES

The School of Dentistry offers regularly a series of continuation courses in the different phases of dentistry. These courses are intended to meet the needs of the profession for short courses in material not covered in the undergraduate curriculum and in new developments in clinical procedures. Courses are usually one to two weeks' duration and include clinical practice in some areas. Special bulletins are published listing courses, dates, and costs. These bulletins are mailed regularly to the graduates of the School of Dentistry, University of Minnesota, the profession in the territory normally served by the University, and to others requesting their names placed on the mailing list. Inquiries should be mailed to the School of Dentistry or the Center for Continuation Study, Minneapolis 14.

†† The student must purchase a \$5 physiological chemistry card from the bursar in the Administration Building. No student will be assigned a desk in the laboratory until he presents this card. The cost of special chemicals, nonreturnable equipment, and breakage will be charged against the deposit.

FOUR-YEAR COURSE OF STUDY IN THE SCHOOL OF DENTISTRY

	First Quarter		Second Quarter		Third Quarter		Total	
	Cred.	Hrs.	Cred.	Hrs.	Cred.	Hrs.	Cred.	Hrs.
Freshman Year								
Oral Anatomy	2	40	3	70	2	40	7	150
Prosthetics Laboratory	4	100	4	100	3	70	11	270
Gross Anatomy Systemic	6	120	.....	.....	.....	.....	6	120
Head and Neck .....	.....	.....	.....	.....	6	120	6	120
Physiological Chemistry	5	50	6	100	.....	.....	11	150
Bacteriology .....	.....	.....	.....	.....	6	120	6	120
	<u>17</u>	<u>310</u>	<u>13</u>	<u>270</u>	<u>17</u>	<u>350</u>	<u>47</u>	<u>930</u>
Sophomore Year								
Microscopic Anatomy	8	140	.....	.....	.....	.....	8	140
Pathology .....	.....	.....	.....	.....	8	140	8	140
Physiology .....	.....	.....	10	140	.....	.....	10	140
Prosthetics Laboratory.....	3	70	.....	.....	2	40	5	110
Prosthetics Clinic .....	.....	.....	.....	.....	.....	30	.....	30
Operative Laboratory .....	.....	.....	4	100	4	100	8	200
Pedodontia .....	.....	.....	.....	.....	1	10	1	10
Dental Writing—Dental								
Health .....	.....	.....	1	10	.....	.....	1	10
Radiology .....	.....	.....	.....	.....	1	10	1	10
Crown and Bridge Laboratory	4	100	4	100	4	100	12	300
	<u>15</u>	<u>310</u>	<u>19</u>	<u>350</u>	<u>20</u>	<u>430</u>	<u>54</u>	<u>1090</u>
Junior Year								
Pharmacology	2	20	6	100	3	30	11	150
Crown and Bridge Lecture .....	.....	.....	.....	.....	1	10	1	10
Crown and Bridge Clinic	30	.....	2	30	1	30	3	90
Operative Lecture	1	10	1	10	1	10	3	30
Operative Clinic	4	120	3	90	4	120	11	330
Prosthetics Lecture .....	.....	.....	1	10	1	10	2	20
Prosthetics Clinic	3	90	3	90	3	90	9	270
Periodontia Lecture .....	.....	.....	1	10	.....	.....	1	10
Periodontia Clinic .....	.....	.....	1	30	1	30	2	60
Orthodontia Lecture .....	.....	.....	1	10	1	10	2	20
Pedodontics Lecture	1	10	.....	.....	.....	.....	1	10
Pedodontics Clinic .....	.....	.....	.....	.....	1	30	1	30
Radiology Clerkship .....	.....	.....	.....	.....	1	30	1	30
Oral Diagnosis Lecture	1	10	.....	.....	.....	.....	1	10
Metallurgy	2	20	.....	.....	.....	.....	2	20
Oral Medicine .....	.....	.....	1	10	1	10	2	20
Oral Surgery Lecture .....	.....	.....	.....	.....	2	20	2	20
Oral Pathology	4	60	.....	.....	.....	.....	4	60
	<u>18</u>	<u>370</u>	<u>20</u>	<u>390</u>	<u>21</u>	<u>430</u>	<u>59</u>	<u>1190</u>
Senior Year								
Operative Lecture	1	10	1	10	.....	.....	2	20
Operative Clinic	3	90	3	90	3	90	9	270
Prosthetics Lecture	1	10	.....	.....	.....	.....	1	10
Prosthetics Clinic	2	60	2	60	2	60	6	180
Crown and Bridge Lecture	1	10	1	10	.....	.....	2	20
Crown and Bridge Clinic	2	60	2	60	2	60	6	180
Orthodontia Lecture	1	10	1	10	1	10	3	30
Orthodontia Clinic .....	.....	.....	.....	.....	1	30	1	30
Oral Surgery Lecture	1	10	2	20	1	10	4	40
Oral Surgery Clinic .....	.....	.....	.....	.....	2	20	2	60
Oral Diagnosis Clerkship .....	.....	.....	1	30	.....	.....	1	30
Periodontia Lecture	1	10	.....	.....	.....	.....	1	10
Periodontia Clinic	1	30	.....	.....	.....	.....	1	30
Pedodontics Lecture	1	10	.....	.....	.....	.....	1	10
Pedodontics Clinic .....	.....	30	2	30	.....	.....	2	60
Conference .....	.....	.....	.....	.....	.....	10	.....	10
	<u>15</u>	<u>360</u>	<u>15</u>	<u>340</u>	<u>12</u>	<u>290</u>	<u>42</u>	<u>990</u>

Graduate Work in Dentistry

Purpose

Graduate work in dentistry is offered to meet the need in two areas. The first is the preparation of qualified teachers and investigators in the various branches of dentistry. The second is to prepare fully trained specialists for the various fields of dentistry. The course of study leads to the degree of M.S. in dentistry, a combination of the conventional work for the master of science degree plus the achievement of proficiency in some phase of clinical dentistry. Hence, the course requires two academic years, but most students will require a minimum of three years.

Requirements for Enrolment in the Graduate School

Eligibility—To be eligible for enrolment in this program the applicant must be a graduate of an accredited school of dentistry and must have achieved in both pre-dental and dental requirements a superior scholastic record, which shall be demonstrated by a standing in the top fourth of his graduating class, or by an average of B or better.

Application for Enrolment—Application to pursue the course of graduate study should be initiated by a letter to the dean of the Graduate School, requesting an application form and the appropriate bulletin. This form, completely filled out, should be submitted to the dean of the Graduate School for evaluation.

Notification of Acceptance—Acceptance for graduate study is contingent upon the applicant's qualifications, facilities available for the course of study requested, and upon vacancies in the area indicated. Notification of acceptance or rejection will come from the Graduate School office.

Registration—Each student will choose an adviser, normally that faculty member whose scholastic and research interests most closely parallel his own. He will secure registration forms in the Graduate School office each quarter, during the periods scheduled for registration, will have them signed by his adviser, and will present them at the Graduate School office for the approval of the dean of the Graduate School. Following initial registration in the Graduate School, an advisory committee will be appointed for each student.

Tuition—The tuition fee for graduate work in dentistry is \$75 per quarter for residents and \$120 per quarter for nonresidents. For students who are majoring in the fundamental sciences, the tuition fee is \$35 per quarter for residents and \$75 per quarter for nonresidents. (See Assistantships and Fellowships, and Veterans' Information.)

Requirements for Admission to Candidacy

Period of Trial—The first period of study by a graduate student is a period of trial. Advance toward the Master's degree will not be officially authorized until the student has completed one quarter of residence and has demonstrated competence in not less than 9 quarter credits of graduate work.

Filing of Application—After the completion of 9 credits of graduate work, an Application for Candidacy form is to be completed and turned in to the Graduate School office by the student who expects to obtain a Master's degree. The student will be duly notified of the result of this action. He will then proceed to meet with his advisory committee for the purpose of outlining the balance of his course of study.

Requirements for the Degree of Master of Science in Dentistry

Program of Study—At the time of enrolment in the Graduate School, the student and his adviser will outline a tentative course of study, which must form a consistent plan of work pursued with a definite aim. Following admission to candidacy, a definite plan of study for the entire course must be formulated by the student and his advisory committee.

Major—The aim of the program of study is to achieve mastery of a specific field of knowledge. This field is designated the major subject. Not less than 18 credits of the study program will be in the major subject. The minimum acceptable quality in these courses is indicated by a grade of B.

Minor—Each student must select an area of study in the basic sciences which is logically related to his major subject and his research project. Not less than 9 credits of the study program will be in the minor subject. The minimum acceptable quality in these courses is indicated by a grade of C.

Research and Thesis—Sufficient research work to train the candidate in the principles and methods of scientific investigation is required. The research project forms the basis for the thesis.

The M.S. in dentistry is offered only under Plan A, the plan which requires a thesis. Each candidate must submit a thesis. At least 6 months prior to final examination for the degree the title must be filed with the dean of the Graduate School on a form which may be secured in the Graduate School office. The thesis title must be approved by the student's adviser and by the Committee on Dental Graduate Education and Research.

The thesis must reflect independent and intensive work based in part on original material. It must show ability to perceive problems, plan their solution, and present the results of this work in an orderly fashion. Familiarity with the literature of this field is expected.

No material which has been published prior to its approval by the thesis committee may be used to meet the thesis requirement for any advanced degree. Candidates contemplating publication of any materials which they expect to present for a thesis should therefore arrange through the Graduate School office to obtain such approval.

The Master's thesis must be typewritten in quadruplicate, two copies on a special form of red-bordered paper, the other two on lighter weight bond. Samples of paper required should be examined in the Graduate School office. Ample margin should be left for binding purposes. The body of the thesis should be double spaced, but footnotes may be single spaced. The four copies of the thesis, certified by the adviser as complete, must be registered in the dean's office of the Graduate School not later than five weeks before graduation. The thesis will be examined by a committee appointed by the dean on recommendation of the committee on dental education and research at the time the thesis subject is submitted. Unanimous approval by the thesis committee is necessary for the acceptance of the thesis. If the thesis is accepted, the candidate must deposit with the Office of Admissions and Records, at least three weeks before commencement, a fee for binding two copies of the thesis, which will be cataloged and deposited in the University Library. The third copy will be placed in the major department, the fourth copy reverting to the student.

Final Examinations—

Written Examination—In addition to the usual course examinations in all subjects where such are given, the candidate for the Master's degree will be required to pass a final written examination in the field of his major. No special final examination is required in the minor. The final written examination will be held not later than three weeks before commencement. It is given by the members of the graduate faculty in the major department, the adviser acting as chairman. This examination shall cover all the work done in the major, and may include any work fundamental thereto.

Oral Examination—The final oral examination will be held not less than three weeks before commencement. This examination will be administered by the student's thesis committee.

The final oral examination will cover all the work offered for the degree, and may include other work fundamental thereto. At the close of the examination, the committee will vote upon the candidate, taking into account all of his work. A majority vote is required for approval.

Recommendation by the Faculty—The dean of the Graduate School will report to the executive committee of the graduate faculty the names of those who have completed the requirements for the degree, and those duly approved will be recommended by the faculty to the Board of Regents of the University. Unless excused by the dean of the Graduate School on the basis of a petition to receive the degree in absentia, all candidates are required to be present at commencement when the degrees are conferred.

General Information

Areas in which Graduate Courses are Offered—At present graduate courses of dentistry are offered in the major fields of Oral Pathology, Oral Surgery, Orthodontics, Restorative Dentistry, and Oral Diagnosis.

Standards—Graduate work in the field of dentistry follows the same general policies and methods established for graduate work in other sciences. This work requires high standards of admission; qualified advisers to graduate students; adequate laboratories and clinical equipment; courses and examinations in residence; and evidence of the power of productive research on the part of the student.

Method of Study—The plan of graduate study at the University of Minnesota implies an entirely different level of educational discipline from undergraduate course work. In the former each student pursues his individual problem. While there will be ample consultation and guidance, the individual student's special interest in selection of subjects will be the basis for outlining the courses. The general principle of application of basic science to clinical problems is emphasized throughout.

GRADUATE COURSES

130,131,132,133. Advanced Oral Anatomy. Working under supervision, the student assists in teaching and participates in the activities of the oral anatomy division and is assigned special problems of tooth morphology involving the execution of drawings with emphasis on genetical and other factors associated with the development of tooth form and methods of studying variation. Hours and credits arranged. Hall.

- 134,135,136. Advanced Technical Restorative Dentistry. A course in which teaching experience is integrated with the technical solution of problems involving the application of the theories of indeterminate stresses to the more complex problems of tooth morphology. Hours and credits arranged. Simon, Wittich, Thom, Listiak, Radusch.
137. Advanced Dental Radiographic Technic. A systematic consideration of the basic factors governing X-radiation emphasizing recent advance in biophysics with special reference to the technic and material employed. Demonstration and practice. Hours and credits arranged. Simon and staff.
138. Advanced Oral Diagnosis. A survey course covering the basic principles of oral examinations, differential clinical diagnostic techniques, and treatment planning. Special topics dealing with oral manifestations of systemic disease and systemic manifestations of oral disease are assigned for collateral reading. Hours and credits arranged. Simon.
139. Advanced Oral Physiology. Environmental and biological factors in the maintenance of occlusion and articulation for normal function with correlative emphasis on the physiology of the musculative, circulative, nutritive, endocrine, and nervous systems. Hours and credits arranged. Staff to be assigned.
140. Preventive Dentistry. Susceptibility and resistance to dental diseases with particular reference to the role of nutrients, nutritional composition of foods and the nutrition aspects of dental diseases. An evaluation of community health programs for caries control. Hours and credits arranged. Staff assigned.
141. Advanced Oral Surgery. Includes assigned clinics in the University Hospitals such as tumor, plastic, and hospital dental clinic in addition to the regular periods in the School of Dentistry.
142. Oral Surgery Seminar. 1 credit. Hours arranged. Clark.
143. Research in Oral Surgery. Hours and credits arranged. Clark and staff.
144. Problems in Oral Surgery. Hours and credits arranged. Clark and staff.
150. Advanced Orthodontic Technics. Hours arranged. 4 credits. Speidel, Steadman, McIver.
151. Treatment Procedures in Orthodontics. Hours arranged. 2 credits. Speidel, Steadman, McIver.
152. Case Analysis. Hours arranged. 2 credits. Speidel, Steadman, McIver.
153. Treatment Planning. Hours arranged. 2 credits. Speidel, Steadman, McIver.
154. Advanced Clinical Orthodontics. Hours and credits arranged. Speidel, Steadman, McIver.
155. Osteology and Myology of the Head. Hours arranged. 2 credits. Steadman.
156. Growth of the Head. Hours arranged. 2 credits. Speidel, Steadman, McIver.
157. Comparative Anatomy of the Head. Hours arranged. 1 credit. Steadman.
158. Seminar in Orthodontics. Hours arranged. 1 credit. Speidel, Steadman, McIver.
- 230,231,232,233. Advanced Clinical Restorative Dentistry. A detailed application of clinical techniques designed to give the student more comprehensive training in restorative dentistry through studies on clinical material, collateral reading, and conferences. Special emphasis is placed on research methods and evaluation of data. Hours and credits arranged. Simon, Wittich, Thom, Listiak, Radusch.
- 234,235,236,237. Research Problems in Restorative Dentistry. To be arranged with individual students upon application after a critical current and historical review of the literature pertaining to the problem has been absolved. Hours and credits arranged. Simon, Wittich, Thom, Listiak, Radusch.

- 238,239,240,241. Advanced Clinical Oral Diagnosis. Practical work in the clinic taking and recording of case histories, making of oral examinations and set-up of a detailed treatment plan. Students are held responsible for the history and course of disease as well as a detailed knowledge of the treatment. Hours and credits arranged. Simon and staff.
242. Research in Oral Pathology. Hours and credits arranged. Mitchell.
243. Dental Research Seminar. 1 credit. Mitchell.
244. Clinical Oral Pathology Conference. 1 credit. Clark, Mitchell. (See Oral Surgery Graduate Courses.)
245. Problems and Research in Orthodontics. Hours and credits arranged. Speidel, Steadman, McIver.

COURSE FOR DENTAL HYGIENISTS

GENERAL INFORMATION

Purpose

The Course for Dental Hygienists is established to fill the need for workers in the public schools, hospitals, industrial institutions and dental offices to do dental prophylactic work and to teach hygiene of the mouth. This type of preventive work is recognized as being one of the great physical needs of our modern times. A thorough scientific training and cultural background, as is possible in the two-year course, are aimed to give the student a professional education and point of view to work in the semi-independent capacity the nature of her work demands. The course also includes training in dental assisting and laboratory work and should make the graduate easily adaptable to the general duties of the private dental office should that be the field of work selected.

The course requires two academic years of study and leads to the degree of graduate dental hygienist (G.D.H.). The incorporation of this work in the University makes it possible to teach all of the subjects of the curriculum in the appropriate departments, thus assuring the student of a university contact, and instructions under the best auspices.

The first year's work deals with preliminary science courses and dental technic, and corresponds to some extent with the one-year course given at other schools. The second year is designed to prepare the student for dental prophylactic service in dental offices and the teaching of mouth hygiene in health departments and schools. The dental hygienist must be able to take an active part in oral hygiene work with the public.

After graduation a dental hygienist secures a license to practice by passing the state dental examination required by the state in which she desires to locate. In all instances she practices under the supervision of a licensed dentist or director of a public health program.

Admission

Students are admitted only at the opening of each fall term.

Special requirements—Applicants for admission to the Course for Dental Hygienists must be young women between eighteen and thirty-five years of age. They must be able to pass a satisfactory general physical examination given by the Students' Health Service. One year of high school typing is advantageous.

General requirements—The University requires for admission into this area, graduation from an approved high school or other preparatory school on the accredited list. (See the *Bulletin of General Information* for a complete statement of admission requirements, rulings applicable to nonresidents, etc.)

Because of the specialized work in dental hygiene all applicants are urgently requested to consult the dean of the School of Dentistry before registration.

Advanced Standing

Students with advanced standing, who enter the Course for Dental Hygienists, should consult the dean of the School of Dentistry when planning their programs. A minimum load of thirteen credits is required each quarter in dental hygiene.

Two academic years of study is required for completing the course for dental hygienists.

Arts and Dental Hygiene

A course leading to the degrees of graduate dental hygienist and bachelor of arts may be arranged by consulting the dean of the College of Science, Literature, and the Arts.

Application Procedure

All inquiries, credentials, and applications for admission to the undergraduate colleges should be addressed to the Office of Admissions and Records, University of Minnesota, Minneapolis 14, Minnesota.

Application blanks may be obtained at any Minnesota high school or from the Office of Admissions and Records of the University of Minnesota.

An admission certificate will be mailed to each student who has met the requirements. Students entering from other colleges or universities will also receive a statement of advanced standing. Instructions for registration will either be enclosed with the admission certificate or will be mailed later—about one month before the opening of the quarter. Students must present their admission certificates when they report for registration.

Fees

Tuition fee (per quarter)	
Residents of Minnesota	\$30.00
Nonresidents	75.00
Matriculation deposit† (first quarter only)	5.00
Incidental fees‡ (per quarter)	11.95
Graduation fee	7.50
Special fees:	
Examination for credit (after first six weeks in residence)	5.00
Special examination*	5.00
Additional course fees as indicated in course description.	

Privilege fees—The fee for the privilege of late registration or late payment of fees is \$2 through the third day of classes. On the fourth day the fee is \$2.50 and then increases 50 cents per day to a maximum of \$5. The fee for late change of registration is \$2.

Part-time fees—Students not registered for the full course will be charged tuition at the rate of \$2.50 per credit for residents, \$6.25 for nonresidents.

Equipment

The University will furnish the larger pieces of equipment needed for the work in clinic and laboratories, but the student must furnish her own uniforms, caps, white shoes and laboratory and operating instruments, textbooks and supplies. These instruments and supplies will be needed during the first year and will cost approximately \$75. Lists of required materials are mailed to new students.

* Such an examination may be taken only upon approval of the appropriate committee.

† Such charges as may be incurred for lockers, library penalties, laboratory breakage, etc., will be deducted from the amount of this deposit and the balance will be refunded by mail upon graduation or after the beginning of the first quarter the student fails to return to the University.

‡ An incidental fee of \$11.95 a quarter is charged each student for which the student receives privileges such as the Coffman Memorial Union, the Health Service, the Testing Bureau, the *Minnesota Daily* including the Official Daily Bulletin, and the university post-office service.

Prizes

Alpha Kappa Gamma Prize—The active chapter of Alpha Kappa Gamma sorority presents a gold key to the student graduating from the Course for Dental Hygienists, who has maintained a scholastic average of B or higher; completed her entire course at the University of Minnesota; and is approved by the faculty.

Louise C. Ball Scholarship and Prize Fund—Annual scholarship assistance is made available to a qualified graduating senior of the Course for Dental Hygienists, or a graduate dental hygienist of the University of Minnesota, who wishes to further her education in some other department within the University.

PLAN OF INSTRUCTION FOR DENTAL HYGIENISTS

	Fall		Winter		Spring		Total	
	Cred.	Hrs.	Cred.	Hrs.	Cred.	Hrs.	Cred.	Hrs.
First Year								
Anatomy, Elementary	4	55	.....	.....	.....	.....	4	55
Anatomy, Oral	2	44	2	44	2	44	6	132
Bacteriology, Elements of .....	.....	.....	.....	.....	4	66	4	66
Composition, Freshman	3	33	3	33	3	33	9	99
Economics (typing)	1	55	.....	.....	.....	.....	1	55
Economics (bookkeeping) .....	.....	.....	3	33	.....	.....	3	33
Personal Health .....	.....	.....	2	22	.....	.....	2	22
Physical Education	0	33	.....	.....	0	33	0	66
Physiology, Human .....	.....	.....	.....	.....	4	44	4	44
Physiological Chemistry	4	55	.....	.....	.....	.....	4	55
Prophylaxis, Dental .....	.....	.....	2	44	1	33	3	77
Zoology, General	3	66	3	66	4	66	10	198
	17	341	15	242	18	319	50	902
Second Year								
Assisting in Dentistry	2	55	2	55	2	55	6	165
Dental Prosthesis and Labor- atory	3	66	2	44	2	44	7	154
Dental Prophylaxis	2	66	2	66	2	66	6	198
Dental Radiology .....	.....	.....	.....	.....	2	33	2	33
Educational School Work	2	55	2	55	2	55	6	165
Oral Histology and Pathol- ogy .....	.....	.....	2	22	.....	.....	2	22
General Pathology	1	11	.....	.....	.....	.....	1	11
Public Health	3	33	.....	.....	.....	.....	3	33
Oral Medicine .....	.....	.....	.....	.....	1	11	1	11
Psychology, Elementary .....	.....	.....	.....	.....	5	55	5	55
Sociology, Introduction to .....	.....	.....	5	55	.....	.....	5	55
Speech, Fundamentals of	3	33	3	33	.....	.....	6	66
Oral Diagnosis	1	11	.....	.....	.....	.....	1	11
	17	330	18	330	16	319	51	979

Description of Courses

A "dagger" (†) indicates that all quarters of the course must be completed before credit is received for any quarter.

First Year

ANATOMY

3. Elementary Anatomy. A brief survey of human gross anatomy including a brief introduction to histology, followed by a more detailed study of the head and neck with special emphasis on the teeth and their investing structures. Lectures, laboratory studies, and demonstrations. Three lecture hours and two laboratory hours a week for one quarter. 3 credits. Boyden and staff.

BACTERIOLOGY

1. Elements of Bacteriology. Principles of bacteriology, general survey of pathogenic bacteria, molds, protozoa, and viruses; elements of immunity; sanitary analysis of water and milk; germicides; bacterial food poisoning. Three lecture hours and three laboratory hours a week for one quarter. 4 credits. Green and staff.

DENTISTRY

7-8-9. Oral Anatomy. A course of lectures, quizzes, examinations, and laboratory instruction. Lectures: dental nomenclature; special attention to definition, spelling, combining and application of terms used in the various divisions of dentistry; study in detail of all deciduous and permanent teeth including calcification, eruption, decalcification, and shedding; tooth form, function, stress, occlusion; surrounding and investing tissues are discussed in detail; anomalies. Laboratory instruction; each student is required to make five drawings of each permanent tooth; ten plastine carvings; seven wax carvings and a didactic and wax carving final. One hour of lecture and three hours of laboratory a week for three quarters. 6 credits. Hall and assistants.

- 21-22. Dental Prophylaxis. Lectures, demonstrations, and practice in the scaling and polishing of the teeth, and the teaching of oral hygiene and home care of the mouth to patients. The work is introduced by practice on manikins followed by practice on patients in the dental infirmary. One hour of lecture and three hours of laboratory a week for one quarter and three hours of clinical practice for one quarter. 4 credits. Jackson.

ECONOMICS

- 32.‡ Beginning Typewriting. For students who have had less than one year of training. Exemption by passing test. Five hours a week for one quarter. 1 credit. Peterson.
- 33.‡ Typewriting. For students who have had one year of training. Exemption by passing speed and theory tests. Five hours a week for one quarter. 1 credit. Peterson.

‡ A fee of \$2.50 per quarter is charged for this course

- 35.†††† Office Practice for Dental Hygienists. A study of the most approved practices relative to the conduct of an office; appliances, accounts, banking, correspondence, filing systems, and records. Three hours a week for one quarter. 3 credits. (Prereq. Econ. 32, 33 or equivalent.) Peterson.

ENGLISH

- 4-5-6. Freshman Composition. The study of the fundamental principles of composition and training in the art of writing. Three hours a week for three quarters. 9 credits. Arranged.

PHYSICAL EDUCATION

- 1-2-3.‡ Elementary Physical Training. Lighter forms of gymnastics, apparatus work, orthopedic exercises, folk dancing, indoor and outdoor games. Individual health consultations. Three hours a week for two quarters. May be taken any two quarters during the first year. Arranged by staff.

PHYSIOLOGY

- 1.‡† Elements of Physiological Chemistry. (a) A brief study of the physical and chemical laws, of the composition of matter, chemical compounds, chemical and energy changes; of the ionic theory; of gases, and solutions. (b) The physiological chemistry of gases, water, salts, carbohydrates, fats, and proteins; of the nutritive media, of digestive fluids and digestion, of the metabolism, of excretion and excretory products. Three lecture hours and two laboratory hours a week for one quarter. 4 credits. Staff.
4. Human Physiology. This course covers the following subjects from the standpoint of function of the human: circulation, respiration, digestion, excretion, metabolism and nutrition, special senses, nervous system and endocrines. Two lecture hours and two laboratory hours a week for one quarter. 4 credits. Staff.

PUBLIC HEALTH

3. Personal Health. Elementary principles of normal body functions; predisposing and actual causes of disease; ways in which disease may be avoided. Two lecture hours a week for one quarter. 2 credits. Not open to students who have taken Human Biology (G.C. 10C) in General College. Thomson.

ZOOLOGY

- 1-2-3.††† General Zoology. This course is designed to acquaint the student with the fundamental principles of general zoology. It deals especially with the structure, physiology, embryology, classification, reproduction, and evolution of animals. Textbook, lectures, quizzes, and laboratory. Students should arrange their programs so as to remain in the same lecture and laboratory sections throughout the entire year. Two lecture hours and four laboratory hours a week for three quarters. 10 credits. Minnich and staff.

‡ A physical education fee of \$2.50 per quarter is charged for this course.

†† The student must purchase a \$5 chemistry card from the bursar in the Administration Building. No student will be assigned a desk in the laboratory until he presents this card. The cost of special chemicals, nonreturnable equipment and breakage will be charged against this deposit.

††† A fee of \$1.50 per quarter is charged for this course.

†††† A fee of \$2.50 per quarter is charged for this course

Second Year**DENTISTRY**

- 40-41-42. Educational School Work. A lecture and recitation course in the preparation and delivery of talks on oral hygiene for various groups and occasions, followed by demonstrations and practical work in teaching oral hygiene in the public schools. One lecture and two laboratory hours a week for three quarters. 6 credits. White.
- 45-46-47. Assisting in Dentistry. Lectures, demonstrations and practical experience in surgical and dental assisting, general anesthesia, operative dentistry, materia medica, and orthodontia. Six hours a week for three quarters. 6 credits. Staff.
- 53-54-55. Dental Prophylaxis. A continuation of Dental Prophylaxis 22. The teaching of oral hygiene is emphasized. Approximately sixty cases must be completed. Six hours a week for three quarters. 6 credits. Jackson.
56. General Pathology. An elementary discussion of general pathology including circulatory disturbances, inflammation and tumors, and special consideration of selected diseases with reference to those affecting the oral cavity. One lecture hour a week for one quarter. 1 credit. Mitchell.
- 57-58-59. Prosthetic Dentistry and Dental Laboratory. Prosthetic Dentistry: a course of lectures and laboratory instruction. Lectures: instruments and materials used in dental prosthesis; impression materials and their manipulation; cast construction; art base construction; construction of trial plates for partial and complete dentures; the setting-up of artificial teeth; packing, vulcanizing, curing and polishing dentures and assisting in denture construction. Laboratory instruction: assisting in impression taking; pouring impressions and making casts and models; construction of art bases; construction of trial plates and the setting-up of teeth; occlusion and articulation.
Dental Laboratory: A course of lectures and laboratory instruction. Lectures: instruments and materials used in the various branches of dentistry; assistant's laboratory duties in such areas as crown and bridge, operative dentistry, orthodontia, etc.; a study of the manipulation of waxes, investments, metals, plastics, porcelains and cements; soldering. Laboratory instruction: the construction of indirect dies from various materials; wax patterns and castings made for all types of cavity preparations; manipulation of porcelain and plastics; soldering of contact; the manipulation of synthetic porcelain and dental cements. One lecture a week for three quarters, 120 laboratory hours. 7 credits. Prerequisite, Oral Anatomy 7-8-9. Hall and assistants.
60. Oral Histology and Pathology. The course includes a résumé of the histology of the teeth and oral tissues, thereby preparing a background for the more detailed discussion of the special pathology of these tissues. It includes systemic manifestations of oral diseases, pathology of the mandibular joint and tongue, and a review of the present status of knowledge concerning dietary influences. Two lecture hours a week for one quarter. 2 credits. (Prereq. General Pathology 56.) Radosch.
62. Dental Radiology. A series of lectures and demonstrations on the application of Roentgen rays for dental diagnostic purposes. The course includes the electrophysics of the apparatus, positioning of the films, angulation of the machine, and processing. One lecture hour and two laboratory hours a week for one quarter. 2 credits. Williams.
80. Oral Diagnosis. A lecture course covering a study of oral examinations, methods of investigation, and the recording of clinical data. 10 lectures. 1 credit. Simon.

82. Oral Medicine. A study of the general diagnosis and methods of investigation related to the clinical and fundamental problems of internal medicine. One lecture hour a week for one quarter. 1 credit. Wahlquist.

PSYCHOLOGY

- A. Elementary Psychology. An introduction to psychology with special attention to its application. Five lecture hours a week for one quarter. 5 credits. Long-staff.

PUBLIC HEALTH

51. Community Hygiene. Elementary concepts of development, spread, and prevention of preventable diseases, community programs for their control. 3 credits. (Prereq. 3, 50, or Human Biology (G.C. 10C) in the General College; not open to students who have taken 4, 50, 52, or 53.) Cowan.

SOCIOLOGY

1. Introduction to Sociology. A study of the characteristics of human group life. An analysis of the factors associated with the development of human group life and man's social environment; the structure of the social environment and its influence upon the individual's behavior. Three lecture hours and two recitation hours a week for one quarter. 5 credits. Monachesi and others.

SPEECH

- 1-2-‡ Public Speaking. Fundamentals of effective speaking; breathing, voice production, enunciation, and action; delivery of extracts from the works of well-known writers and speakers; principles underlying speech-making to both oral and written compositions. Three hours a week for two quarters. 6 credits. (Prereq. Composition 4-5-6.) Gilkinson and others.

‡ A fee of \$1 per quarter is charged for this course.

An Introduction—

This bulletin gives an overview of the curriculum and activities of the Course in Applied Mortuary Science. The General Extension Division is charged with the administrative responsibilities of this semi-professional program, but the curriculum involves many university departments and agencies. It is an all-university course.

The course is designed to help able men and women master the fundamental techniques and knowledge that will bring them the greatest professional success and also contribute to the general welfare. Beyond occupational achievement there are more significant objectives. It is necessary to instill a keen sense of professional ethics and to inculcate a full appreciation of the enormous responsibilities in counseling those who are emotionally distraught. There is an honorable and useful place in society for those who by reason of personality, training, knowledge, and ability are qualified to give advice and guidance to the bereaved family.

For those actively engaged in funeral service, this bulletin is an abbreviated source book. It tells the precise requirements for licensure in Minnesota. It gives information concerning the nature and scope of the curriculum. It will assist those who are interested in funeral service as a vocation, by pointing out important sources for vocational guidance and by indicating the counseling services available at the University.

To prospective students this bulletin should answer some general questions related to mortuary science. The student seeking a satisfying career should have at his command factual information concerning those vocations appealing to him. Those who achieve an understanding and appreciation of the demands of funeral service before beginning formal training are the ones likely to be of greatest value to their communities, to their vocation, and to themselves.

Finally, it must be remembered that students completing any course of study should become effective citizens. Occupational success, however essential, cannot overshadow the importance of living together in peaceful human relationships. Although the Course in Applied Mortuary Science is relatively a short program, the student has opportunity to avail himself of the many cultural advantages of this campus. By providing the sources, the materials, the direction, the instruction and by placing these in a cultural and intellectual environment, the University expects the graduate of this program to find vocational satisfaction and to be more fully prepared to assume his social and civic responsibilities.



J. M. Nolte, Dean, General Extension Division

Course in Applied Mortuary Science

The University of Minnesota, through the cooperation of the Medical School and other schools of the University, the Minnesota State Department of Health, and the Minnesota Funeral Directors' Association, announces its Course in Applied Mortuary Science. This is a nine-month course, conducted in three university quarters of twelve weeks each. The course is open to both men and women.

HISTORY

The course of instruction for the mortician was established at the University of Minnesota by act of the Board of Regents on April 4, 1908. No effective organization was made, however, and the work lapsed until it was resumed in 1914 by the Medical School. The first session began January 5, 1914, and lasted six weeks; only an eighth grade education was required for entrance. In 1916 the course was extended to eight weeks, and one year of high school work was required for admission. Since then, the length of the course has been successively extended to twelve weeks, twenty-four weeks, and in 1932 to thirty-six weeks. Graduation from high school is now required for entrance. Since 1921 the General Extension Division has had the administrative control of the course. In 1944 the name was changed from Course in Embalming to Course in Applied Mortuary Science.

PURPOSE

The work of the Course in Applied Mortuary Science combines instruction in the necessary basic sciences, training in the technical details of practical embalming, and instruction in business methods and procedures and in those subjects required by the State Department of Health as essential to the welfare of the community. The aim is to convey that knowledge which is requisite to conducting a business of this kind in the interest of the general public. All instruction is on the college level.

ADMISSION PROCEDURE

It should be carefully noted that unprecedented demand and limited educational facilities may prevent unrestricted enrolment for any one class. A quota has been established for this course and acceptance will be determined by the following regulations:

1. Applicants will be admitted at the beginning of the fall quarter only.
2. All applications for admission to the Course in Applied Mortuary Science should be in the Mortuary Science office prior to June 15 of the year in which the applicant seeks admission.

3. Applications will be considered on the basis of (a) residency, (b) veterans' status, (c) scholastic achievement, and (d) other factors formulated by university administrative officials.
4. Applicants will be notified of acceptance or rejection on or before July 15 of the year for which they are accepted.

REGISTRATION PROCEDURE—NON-VETERANS

1. Immediately upon receipt of your acceptance into the Course in Applied Mortuary Science, you must notify the director in writing of your intention to register.
2. On the date designated in your letter of acceptance you will present yourself with evidence of your acceptance at 155 Nicholson Hall to register for the course.
3. You will be issued an appointment for a physical examination which must be taken in accordance with university procedure.
4. The fees for the fall quarter must be paid in full on or before the last Saturday preceding the Monday on which the classes begin.

Note—All further instructions necessary will be issued to you from the office of the director.

REGISTRATION PROCEDURE—VETERANS

For students under Public Laws 16 and 346, the Veterans Administration authorizes state universities and other public colleges and universities to collect tuition based on a teaching cost formula or on a schedule equivalent to the nonresident fee. The Veterans Administration, at present, is compensating the University of Minnesota on the latter basis. On either basis the Veterans Administration may not pay tuition, book, and supply costs in excess of \$500 per normal academic year, for any one student, prorated \$166 a quarter, fall, winter, and spring.

1. Immediately upon receipt of your acceptance into the course, you must notify the director in writing of your intention to register.
2. On the date indicated in your letter of acceptance you should call at 155 Nicholson Hall to register for the course. At this time it will be necessary for you to present:
 - (a) Your letter of acceptance.
 - (b) Your certificate of Eligibility and Entitlement.

Note—If you have previously attended the University of Minnesota and have not registered in any other college or school for further training since such registration, it will not be necessary for you to have a certificate. For other than former University of Minnesota students, it will be necessary for them to show authorization from the Veterans Administration. All veterans must know their *claim number*.

3. Turn in your approved fee statement to the cashier, General Extension Division, Nicholson Hall, University of Minnesota. (The Veterans Administration will not pay the \$5 matriculation deposit required of new students. Veterans will be required to pay this fee personally.) The cashier will give you a receipt showing your fees are paid by the Veterans Administration.
4. Present fee receipt and list of courses, signed by your adviser (obtained at the time of registration) to Bureau of Veterans' Affairs, Shevlin Hall, to obtain purchase voucher on the basis of which books and supplies may be obtained from one of the university bookstores. Required books and supplies, including chemistry deposit cards and rental cards for lockers and microscopes, are issued on the basis of these vouchers.

Veterans Administration—The Veterans Administration has been designated by the government as the authorizing agency for training under the Servicemen's Readjustment Act, Public Law 346 (G.I. Bill), and under the Vocational Rehabilitation Act for veterans with service-connected disabilities, Public Law 16 (Rehabilitation Training Program). Veterans approved for training under either act will be provided books, supplies, tuition fees, and allowance for maintenance paid by the government. Application may be made to the Veterans Administration, % John G. Pease, Fort Snelling, St. Paul 11, Minn. (Telephone: De 2411.) Necessary forms and information, however, may be obtained at the University Bureau of Veterans' Affairs, Shevlin Hall.

Veterans' Information and Referral Service—414 South 8th Street, Minneapolis (Telephone: At. 4344), is a cooperative venture of several federal, state, and Minneapolis agencies. Counseling and information are provided by trained interviewers. First copies of discharge papers are duplicated without charge; additional copies or duplicates of other important documents are obtainable at a nominal fee. This office is prepared to furnish advice and aid to veterans requesting assistance in housing. Veterans are also given aid in filling out application forms and other papers.

VOCATIONAL COUNSELING SERVICE

Advisers for the Course in Applied Mortuary Science are available for consultation in person or by letter with prospective students. Their offices may be reached by calling the University of Minnesota, Main 8177 and asking for the General Extension Division (Ext. 6295) or by calling in person at Room 155 Nicholson Hall.

If prospective students have any doubt as to their probable success or satisfaction as morticians, it would be well for them to consult all available sources of information regarding the nature of the work, and the personal traits necessary for success in it. Some sources are: a pamphlet entitled *Funeral Service as a Vocation*, pub-

lished and sold by the National Funeral Directors Association, 135 West Wells Street, Milwaukee 3, Wisconsin. This publication costs 10 cents. A similar booklet, *The Jobs of Funeral Director and Embalmer*, is an occupational brief prepared and released by the United States Employment Service.

In making adjustments to life, many students desire or need assistance with regard to their choice of vocation, personal and social adjustments, reading and study of skills, and other problems. Any prospective student may make an appointment for such counseling. (If the administration of tests is recommended and taken, a small fee is charged for this service, provided the student is not already attending the University.) One of the special services of this department, in conjunction with the Counseling Bureau, is the educational skills clinic, where students may improve their reading and spelling skills, their vocabulary, and their study habits. In addition to the staff members working with students in the educational skills clinic, there are counselors who deal primarily with problems of vocational planning, personal adjustment, social development, and marriage and family relationships. Students who would like to discuss their problems with a counselor or who need direction to other advisory services may feel free to ask for such services.

Each year a Students' Work Committee is organized and is made up of members of the faculty. The purpose of this committee is to meet regularly and examine the scholastic performance of each student and to make recommendations for improving their scholastic standing. Under certain conditions, and after careful individual consideration, the committee may recommend disenrolment and transfer to a course of study that is more appropriate to the student's needs and abilities.

AWARD OF MERIT

The Minnesota Funeral Directors' Association will award at the commencement exercises a certificate of merit to the outstanding student in the Course in Applied Mortuary Science. The student will be selected by a committee from the association, the Minnesota State Board of Health Committee of Examiners, and the faculty. The award is made on the basis of scholarship, citizenship, professional attitude, and personality.

CLASS ORGANIZATION

Each year the class forms an organization which conducts the activities of the class as a whole. It arranges for field trips; conducts a mixer at the beginning of each year, at which the students and friends and faculty become better acquainted; arranges for several supper club meetings, at which interesting and outstanding speakers are presented; and carries out other social functions planned by the class.

GENERAL INFORMATION

Ordinarily high school graduation is the basic prerequisite for admission to the Course in Applied Mortuary Science. This means that applicants from states where college attendance is not mandatory for licensure should be graduates of a four-year high school or a three-year high school preceded by junior high school. An equivalent education properly certified may be accepted by the director.

Special Notice for Minnesota Students—Students who desire to become eligible for license as an embalmer in the state of Minnesota (see pages 12-14) must have completed a year (45 quarter credits, or 30 semester credits, or their equivalent) of general study in an accredited college or university before entering the Course in Applied Mortuary Science. For performance in the General Educational Development tests, the State Board of Health will accept a maximum of only 8 quarter credits toward the fulfillment of the one-year requirement of college work. The General Extension Division will determine for applicants whether their work has been in an acceptable accredited institution. Those who do not conform to this rule will not be considered candidates for a license to practice in Minnesota.

PRE-MORTUARY SCIENCE EDUCATION

At the present time the subject matter to be covered in this study is not prescribed. *It is strongly recommended*, however, that it include a full year of English composition, together with some work in general biology (human physiology, zoology, or botany) and in the social sciences (sociology, political science, and economics). It is also suggested that wherever possible the student include elementary courses in psychology, accounting, art, and chemistry. Any prospective student who wishes counseling in program-planning is invited to contact one of the advisers either by letter or in person.

The General College of the University of Minnesota, as well as several other colleges throughout the state, has established a Pre-

Note—This year of college study must not be considered as prerequisite to admission to the Course in Applied Mortuary Science. Most states indicate high school graduation as the minimal educational requirement for the embalmer's license, but some states have modified their regulations to include one or more years of college.

It is highly important that prospective students ascertain the precise requirements of their own state, or the state in which they hope to secure a license, before entering this or any other school or course of mortuary science.

Mortuary Science Curriculum, offering those subjects considered most helpful to the mortuary science student. Those who expect to satisfy the one year of college requirement demanded by the Minnesota State Board of Health by attending the University of Minnesota are urged to investigate the General College program. The advisers in the General College or in Mortuary Science will give full details. (See page 11.)

Application Blanks—Applicants for admission will be supplied with a special blank which asks for certain information. If the applicant has studied at a collegiate institution beyond high school, he should support his completed application blank with a certified transcript or statement from the registrar or recorder. This statement should show the applicant's complete record, including an honorable dismissal.

Eligible high school graduates must complete the application blank and include a certified statement from the principal, or other proper official, covering the applicant's high school record and an estimate of his probable success.

Requests for and completed application blanks should be sent to the Office of the Director, Course in Applied Mortuary Science, 155 Nicholson Hall, University of Minnesota, Minneapolis 14, Minnesota. Satisfactory applications will be considered as indicated under Admission Procedure on pages 2-3.

MISCELLANEOUS

Orientation Week—During the week preceding the opening day of classes each student for the Course in Applied Mortuary Science must present himself at the Health Service for a required medical examination.

Health Service Facilities—Through the Students' Health Service the University makes available to students medical care, medical examinations, and health consultations. General service is provided free of charge, but for services which are specialized and individual in character, such as dentistry, X ray, board and laundry in the student hospital, out-patient calls, minor surgery, etc., special fees are charged. No student, however, will be denied service because of inability to pay these fees. Major surgical operations, or prolonged medical care ordinarily are secured through private physicians selected by the students or their families, but, if necessary, operations may be arranged through the Students' Health Service upon the established basis.

University Library—The Library Building on the Mall of the Minneapolis Campus houses a collection of nearly one and one-half million volumes available for use. In addition there are more than 250,000 volumes in the Law Library, the Agriculture Library on the St. Paul Campus, in the branch libraries of Chemistry, Engineering, Mines and Metallurgy, of the Institute of Technology, the Geology

Library, the University High School, and the smaller work collections in many important departmental offices where texts specifically applying to their work have been placed for greater convenience.

State Board of Health Library—The library of the State Board of Health, which contains specialized materials in the field of public health, is also available for use by the students. It is located in the Department of Health Building on the campus.

Athletic Recreation—The university facilities for physical education, recreational sports, and intramural activities are open to students of the Course in Applied Mortuary Science. A booklet, giving detailed information regarding physical education and athletics for men and women, is issued to all students at the time of the medical examination. Additional information may be obtained at the Intramural Athletics office, 203 Cooke Hall.

Athletic Tickets—Students in the Course in Applied Mortuary Science are eligible to obtain the regular university athletic season tickets at the customary reduced rates. Directions for obtaining these tickets and schedules of games may be found in the Official Daily Bulletin of the *Minnesota Daily*.

Welcome Week—Students in the Course in Applied Mortuary Science are invited to take part in the exercises provided for all new entering students.

The week immediately preceding the first week of classes each year is set aside for this purpose. This week is occupied with a variety of events that have been found profitable to new students.

Religious Coordinator—The University cooperates wholeheartedly with the student programs maintained on the campus by denominational and inter-faith groups. Nine major Protestant denominations, together with Roman Catholic and Jewish foundations, maintain professional staff workers serving both the Minneapolis and St. Paul campuses. There are also active programs carried on by the Young Men's Christian Association, the Young Women's Christian Association, and the Inter-Varsity Christian Fellowship. Students are encouraged to affiliate with appropriate groups and to participate in worship, study, and social functions designed to promote their personal and spiritual development. The coordinator of students' religious activities, functioning in the Office of the Dean of Students, maintains an office at 203 Eddy Hall.

Speech Clinic—Students desiring help in the correction of speech deviations should register in the Speech Clinic, located in 20 Shevlin Hall. Stuttering, sound substitutions, lispings, foreign accent, voice deviations, deafened speech, and oral inaccuracy are the various types of defects corrected by speech clinicians. Because speech defects are often a handicap to successful college life and also in some vocations, students are invited to seek clinical aid upon entrance to

the University. A small fee is charged for these services. Left-handed students whose writing is awkward or lacking in correct slant may receive writing lessons in the clinic.

General Social Program—The center of much of the student social program is in the Coffman Memorial Union where an active and varied social program under the direction of full-time social consultants is always in progress. The Union building has numerous meeting rooms for student groups, general lounges, two ballrooms, an arcraft workshop, billiard and pool tables, as well as a 16-lane bowling alley.

Student Employment—The Student Employment Bureau in Room 17, Administration Building maintains a file of available part-time jobs on the university campuses and in the Twin Cities for the purpose of aiding any student who needs to earn money to help finance his educational program. All students must apply in person before being considered for any vacancy. Upon arrival at the University, the student should report to the Employment Bureau to file his application outlining his need, work experience, work preference, course of training selected, class schedule, and other related information. In order to remain active these applications must, at all times, be kept up to date with such necessary information as local address and telephone number and class schedule.

HOUSING FACILITIES

The University of Minnesota maintains or supervises a variety of housing and eating facilities for out-of-town students. Further information other than that supplied here may be obtained by writing to the Director of the Student Housing Bureau, Room 202, Eddy Hall. No provision can be made for reserving rooms in private homes previous to arrival on the campus. However, single students are assured that adequate housing will be available through the services of the Student Housing Bureau.

Housing Regulations—

1. According to the regulations of the Board of Regents, all students are required to live in university-approved residences, and those taking rooms or apartments elsewhere must apply to the director of the Student Housing Bureau for approval.

2. The University recommends that all students living in private homes or rooming houses sign a contract (furnished by the University to the householder) with the householder when a room is engaged. Contracts should be made for a quarter at a time.

3. Students planning to move at the end of a quarter are required to give the householder ten days' notice. Even though the student may not be renting on the quarterly basis, he must make arrangements with the householder to give the amount of notice required

before moving to another residence. All changes of address should be reported to the Student Housing Bureau.

4. Women living in private homes and rooming houses are expected to follow the hour regulations established for women's residences. Girls may entertain callers in suitable rooms in their residences until 11 o'clock on week nights and until 12 o'clock on Friday and Saturday nights and nights preceding university holidays.

5. All students are encouraged to consult with the Student Housing Bureau concerning any difficulties or controversies pertaining to housing. In addition, the Bureau stands ready to offer assistance or to refer students to the proper agency dealing with all non-housing matters.

6. It is important to remember that while living in a private rooming house or apartment each student has obligations enforced by the University in the way of conduct, payment of rent, and adequate notice where there is intention to move. If you are at all in doubt about your privileges and rights, call at the Student Housing Bureau.

Housing for Men—Pioneer Hall, the men's dormitory, supplies room, board, and social program. Veterans and Minnesota residents are given priority among applicants. Emergency barracks-style accommodations are available at a minimal cost. Rooms in approved private dwellings are available through the Student Housing Bureau. In some instances it is possible to exchange services for room, or board and room. All students must live in houses which meet the standards set by the University.

Information on individual house ratings and those rooming houses also serving board may be obtained from the Student Housing Bureau.

Further information on men's dormitories may be secured by writing to the Director of Men's Residences.

Rooms are available in the St. Paul Campus dormitories for the spring quarter and Summer Session. Meals may be obtained at the St. Paul Campus cafeteria during the spring quarter and the first term of the Summer Session.

Housing for Women—Comstock Hall, Sanford Hall, Meredith Hall, and the Winchell Cottages are university-owned dormitories. In selection of applicants, preference is given to girls who are Minnesota residents. In addition to these facilities maintained by the University, there are numerous private rooming houses for women students. All of these are inspected and must meet minimum standards set by the University. Information about vacancies in these facilities may be secured from the Student Housing Bureau.

Housing for Married Students—Vacancies occurring in house-keeping rooms and sleeping rooms are registered with the Student Housing Bureau. In addition, the University operates an emergency housing project (trailers, quonset huts, prefabricated houses) for

married students, located between the Minneapolis and St. Paul campuses. Space is limited and priority is given Minnesota veterans. Application should be made to the Como Avenue Housing Project, Room 3, Administration Building.

FOOD SERVICE FACILITIES

Coffman Union Food Services (Minneapolis Campus)—Varied and extensive food service facilities are available to students in Coffman Memorial Union. In addition to the large modern cafeteria there are well equipped and adequately staffed soda fountains, lunch rooms, commuters' lunch rooms (for students bringing bag lunches from home), and complete banquet and party dining facilities. In Shevlin Hall, located near the northwest corner of the campus, a combination cafeteria and lunch room is provided for the convenience of both college and University High School students.

Dormitory Food Services (Minneapolis Campus)—Pioneer Hall (men's residence), Comstock Hall, Sanford Hall and the Winchell Cottages (all women's residences) provide board in conjunction with housing only to those students who reside there.

Other Food Services (both campuses)—In addition to the university-operated food services indicated above there are a number of privately operated restaurants, lunch rooms, tea rooms and soda fountains located near each campus.

Some of the student fraternities and sororities also make food services available to their members.

UNIVERSITY CERTIFICATE, A.A. DEGREE, LICENSURE

At the close of the spring quarter the University Certificate in Applied Mortuary Science is issued to those students who have successfully completed all of the work of the course. This is the University's recognition of satisfactory work. The certificate is issued without reference to the legal requirements for the embalmer's license. At the end of the last quarter of any class running more than one quarter, examinations are given which cover the work of all preceding quarters in this class. The degree of success attained by the student in these examinations determines his final grades.

ASSOCIATE IN ARTS DEGREE

Some students, under certain conditions, can qualify for the associate in arts degree conferred by the General College. All of the credits earned in Mortuary Science can be transferred to the General College and these credits will be accepted toward the degree requirements. Students who have completed one academic year (45 quarter credits) in General College prior to graduation from Mortuary Science must satisfy three additional requirements to be eligible for the A.A. degree. These are: (1) present three quarters of physical education; (2) show satisfactory performance on a Compre-

hensive Examination; and (3) submit to a medical examination before granting of the degree. It should be clearly understood that graduates from Mortuary Science do not automatically receive this degree, and if they have completed one academic year in General College it will probably be necessary to take some additional work in General College to meet all of the degree requirements.

Students who have not entered a college or university to prepare for Mortuary Science are urged to consider this degree program. By completing one calendar year in General College (fall, winter, and spring quarters, plus Summer Session work) it is possible to receive the A.A. degree after graduation from the Course in Mortuary Science. It is understood that the student must satisfy all admission and other requirements established by the General College, and students should seek early advice in regard to their program.

Out-of-state students who are interested in going beyond the minimal educational requirements for licensure in their states are also invited to consider the degree program. At the present time, registrations in General College are limited to qualified residents of Minnesota and the immediate geographic area. Admission to the degree program will be determined in relation to the policies that are in effect at the time of application. Out-state students (as well as Minnesota students) can qualify for the degree under the following conditions:

1. Establish eligibility and qualifications for admission.
2. Satisfactorily complete minimum academic credits in General College.
3. Satisfactorily complete a minimum of three academic quarters in the Course in Applied Mortuary Science.
4. Satisfactorily complete the Comprehensive Examination at the level prescribed by the General College.
5. Receive certification from the General College for the degree of associate in arts.

The advisers in General College and Mortuary Science will give further assistance to those interested in the associate in arts degree. *It should be noted that the University Certificate in Applied Mortuary Science is issued without reference to the requirements for a degree.*

EXAMINATION FOR MINNESOTA LICENSE AS AN EMBALMER

Candidates for a license in Minnesota as embalmer must pass satisfactorily the state examination given by the Minnesota State Board of Health. The examination is conducted annually at the close of the school year in June and is open to all applicants who have complied fully with the requirements of the licensing law (see Minnesota Statutes 1945, Section 149.01, et seq.) and the Regulations of the State Board of Health. The board is responsible for its examina-

tion and collects from each applicant the sum of \$10 as an examination and original license fee. Students in the Course in Applied Mortuary Science should distinguish carefully between the state requirements for a license and the requirements for the university certificate.

Necessary Qualifications—The Minnesota State Board of Health requirements for license as embalmer are set out in Regulation No. 29, as amended January 20, 1949, as follows:

Qualifications for License as an Embalmer

Regulation 29. Every person who wishes to qualify as competent to embalm a body for burial or transportation, as required by the laws of the State of Minnesota, shall comply with the following requirements:

He shall make application to the Minnesota State Board of Health for a license. Such application shall contain the name of the applicant in full, age, and place of residence. It shall be accompanied by affidavits from at least two reputable residents of the county in which the applicant resides or proposes to carry on the practice of embalming or funeral directing certifying that the applicant is of good moral character.

The applicant must be at least twenty-one years of age, must have satisfactorily completed at least one scholastic year in a general educational course at an accredited college or university, and following such academic work must have completed a course of study and secured a certificate of graduation from the Course in Applied Mortuary Science conducted by the University of Minnesota or any established school of embalming accredited by the Conference of Funeral Service Examining Boards of U. S., Inc.

After the educational qualifications in the order herein specified have been acquired, the applicant shall have served at least one year of apprenticeship under an embalmer licensed in Minnesota. During this full period of practical experience or apprenticeship the applicant shall have been registered as an apprentice embalmer with the State Board of Health and shall have helped to embalm or have embalmed under supervision at least twenty-five bodies. The applicant must attain a satisfactory level of achievement in a written examination given by the State Board of Health in each of the subjects of anatomy, bacteriology, business methods, elementary chemistry, pathology, public health laws and regulations, and the practice of embalming.

An applicant who fails to attain a satisfactory level of achievement in not more than two of the required subjects shall be re-examined on application at the next annual examination in only those subjects in which he failed. An applicant who fails in three or more subjects shall be re-examined on application at the next annual examination in all subjects necessary for licensure.

EMBALMER'S APPRENTICESHIP

The candidate for license, after receipt of the university certificate of graduation, shall register with the State Board of Health as an apprentice embalmer. A renewal of the registration is required in December of each year during the period necessary to satisfy the apprenticeship requirement. A fee of \$1 is required for registration and for the annual renewal. The apprentice embalmer must secure his experience under the supervision of an embalmer licensed in Minnesota. Regulation No. 47, dealing with the embalmer's apprenticeship, reads as follows:

Qualifications for Apprentice Embalmer

Reg. 47. Registration with the State Board of Health as embalmer apprentice, as provided for by Chapter 417, Laws of 1937, will be accepted on condition that such registrant is so registered with the purpose of learning to be an embalmer, of complying with all necessary educational requirements, and then taking examination for the State's license.

An embalmer's apprentice may be registered and work as such for a period of not more than five years prior to obtaining a license as an embalmer; not more than three years of such apprenticeship being served prior to enrolling in an embalming school accredited by the State Board of Health, and not more than two years being served after successfully completing a course of study in such accredited embalming school.

No person who is less than 18 years of age shall be permitted to serve as an apprentice embalmer, nor shall apprenticeship registration by such persons be accepted by the Board.

No service in embalming may be performed by an apprentice except under the personal direction and in the presence of the licensed person to whom he is apprenticed or under another licensed embalmer who is a regular operator in the same establishment.

No one may at one and the same time be apprenticed to more than one licensed embalmer.

Apprenticeship registration with the Board must show the date on which such apprenticeship service began; the name and address of the licensed embalmer to whom he is apprenticed, and the name and address of the company, corporation or firm of which such licensed embalmer is the owner, partner or employee. Discontinuance of such apprenticeship service or change to some other licensed embalmer for apprenticeship service must be immediately reported to the State Board of Health. Apprentices must file with the State Board of Health not less than 25 acceptable case reports upon the forms provided by said Board for such purposes. If the embalmer to whom one is apprenticed is not the owner or manager of the establishment in which such embalmer and his apprentice are working, then in such case all apprentice case reports and all statements concerning the period of apprenticeship, in addition to being signed by the embalmer to whom apprenticed, must also be approved and signed by the employer of such embalmer and apprentice.

LICENSE AS A FUNERAL DIRECTOR

The State Board of Health by Regulation No. 48 prescribes the manner in which a license as a funeral director may be secured. The candidate must serve a two-year period of registered apprenticeship as an apprentice funeral director under a funeral director licensed in Minnesota. Upon registration he must pay a fee of \$1 to the State Board of Health and renew his registration annually in December of each year during the period of his apprenticeship by the payment of a renewal fee of \$1. The apprenticeships in embalming and funeral directing may be served concurrently. Upon the completion of at least 18 months of experience as an apprentice funeral director, the candidate will be admitted to the examination for license as a funeral director which is given annually at the close of the school year in June. An examination and license fee of \$10 must be paid. The examination is written and consists of two parts, one in the laws and regulations, the other in the practical aspects of funeral directing.

STUDENTS AS APPRENTICE FUNERAL DIRECTORS

Students who plan, while enrolled in the Course in Applied Mortuary Science, to register with the State Board of Health as apprentice funeral directors or to continue such apprenticeships commenced prior to their admission to the course will observe the following rule of the board:

During the school year credit will only be allowed a student for registered apprenticeship served under a sponsor operating within the Twin Cities.

Therefore, entering students in the course who are registered with funeral directors outside the Twin Cities should arrange to transfer their registrations to Twin Cities sponsors. The Board makes no charge for a transfer of registration during the year.

APPOINTMENTS AS SUB-REGISTRAR OF VITAL STATISTICS

Under the Uniform Vital Statistics law, the State Board of Health upon recommendation of the state registrar may appoint sub-registrars to receive certificates of death, issue burial permits, and, by new authority contained in the January 20, 1949, amendment to Board Regulation No. 35, issue transportation permits. This appointment is given only to embalmers after a special written examination. Candidates for license as embalmer are given an opportunity at the time of the state examination to write the special test for the appointment as sub-registrar.

SPECIAL NOTE

For further information concerning requirements for licensure as an embalmer or funeral director or for appointment as a sub-registrar, apply to the Minnesota State Board of Health, 469 State Office Building, St. Paul.

ESTIMATED FEES AND EXPENSES

Schedule of Fees per Quarter

Fall Quarter	Resident	Nonresident
Tuition	\$60.00	\$100.00
Incidental fee	11.95	11.95
Matriculation deposit	5.00	5.00
Course fees		
Anatomy	1.00	1.00
Restorative Art	1.00	1.00
Embalming	1.00	1.00
Room rent	60.00	60.00
Board	130.00	130.00
 Winter Quarter		
Tuition	60.00	100.00
Incidental fee	11.95	11.95
Course fees		
Anatomy	1.00	1.00
Restorative Art	1.00	1.00
Embalming	1.00	1.00
Room rent	60.00	60.00
Board	130.00	130.00
 Spring Quarter		
Tuition	60.00	100.00
Incidental fee	11.95	11.95
Course fees		
Anatomy	1.00	1.00
Restorative Art	1.00	1.00
Bacteriology	3.00	3.00
Chemistry	10.00	10.00
Embalming	1.00	1.00
Room rent	60.00	60.00
Board	130.00	130.00

Explanation of Fees

The tuition fee for residents of the state of Minnesota is \$60 for each of the three quarters, or \$180 for the school year; for residents of other states, \$100 per quarter or \$300 for the school year. For less than a full program of work: residents \$5 per credit hour equivalent, nonresidents \$8.50 per credit hour equivalent. All checks should be made payable to the University of Minnesota, and should be drawn for not more than the amount due.

Incidental Fee—All students of the University are charged an incidental fee of \$11.95 per quarter, payable at registration, covering the following services: the privileges of the Coffman Memorial Union, the Counseling Bureau, the *Minnesota Daily* including the Official Daily Bulletin, the university post-office service, *University Address Book*, the University Health Service which includes a complete medical examination, and other items.

General Deposits—At the student's first registration a deposit fee of \$5 is required. From this are deducted from time to time such charges as may arise for locker rental, laboratory breakages, library fines, damage to university property, or any other similar matters. If the deposit becomes exhausted at any time another deposit of \$5 must be paid. The unused balance of the deposit will be returned at the close of the course, or upon withdrawal of the student at any earlier time. This fee is not covered by the provisions of the G.I. Bill of Rights.

Privilege Fees—Registration, for each quarter, must be completed and fees paid before noon of the Saturday preceding the first meeting of the classes. The fee for the privilege of late registration, or late payment of fees, is \$2 through the third day of classes; on the fourth day the fee is \$2.50 and then increases 50 cents per day to a maximum of \$5.

Chemical Laboratory—Each student at the beginning of the course will purchase at the bursar's office a \$10 card; against this will be charged the laboratory fee of \$2, and materials and breakage for the quarter. Subsequent cards will be required in succeeding quarters, but unused portions may be returned for refund.

COURSE OF STUDY

The following subjects constitute the work in the Course in Applied Mortuary Science. These subjects, as indicated, are divided among the three quarters, and the hours designated are approximate. A class schedule will be issued at the beginning of each quarter.

A.M.S.1f,w,s. (Anatomy 1f,w,s.) Nine credits, 200 hours. Controlled by E. A. Boyden, Ph.D. (Medical Sciences), Head of the Anatomy Department

Lectures, recitations and laboratory work. This includes both microscopic anatomy and gross dissection, and covers the principal systems of the body. Each student will obtain experience in personally raising different arteries, and will familiarize himself with the anatomy relating to practical embalming.

A.M.S.2As. Business Methods } Five credits, 60 hours. Reuel I.
A.M.S.2Bw. Accounting } Lund, Ph.D., C.P.A.

This course will include financial records, periodic adjustments and closing entries, accounting statements, and control accounts for business in general. Suitable records and statements for a funeral establishment. A set of transactions for a funeral business has been devised, which the student carries through typical records and statements. Methods of obtaining cost data for a variety of priced cases are demonstrated and income tax forms are examined and explained.

A.M.S.3f,w,s. Restorative Art. 3 extension credits, 72 hours

Lectures, demonstrations, and practical work on the following subjects of study:

Sculpture—Anatomical modeling, with emphasis on muscles of expression; familiarization with tools, materials, and techniques of rebuilding human face and body.

Color—Practical color schemes for general applications, as in cosmetics and interior decoration.

(1) Physical effect of colors upon forms.

(2) Psychological effect of colors upon people.

Design—Developing good taste, sensitivity of proportion, colors, and their relationship with the environment.

A.M.S.4s. (Bacteriology 1) Bacteriology. Four credits, 72 hours. Controlled by J. T. Syverton, M.D., Ch.E., Ph.D., Professor of Bacteriology

Lectures, laboratory procedures and demonstrations. Subjects of study:

1. Distribution of bacteria
2. Nutrition of bacteria
3. Bacterial physiology
4. Disinfection and sterilization
5. Transmission of infection
6. Post-mortem bacteriology
7. Immunity
8. Pathogenic bacteria
9. Viruses
10. Pathogenic fungi and protozoa

A.M.S.5f. Business English. Two extension credits, 24 hours

Attention centers on factors important for the effective business writing. Business situations serve as a basis for the various types of letters the student writes. The student receives individual instruction as he plans and writes his letters.

A.M.S.6f,w,s. Chemistry. Nine extension credits, 150 hours. Norville C. Pervier, Ph.D., Associate Professor of Chemistry

Lectures, demonstrations, and individual laboratory work covering fundamental ideas of inorganic and organic chemistry. The chemistry of the body and of disinfection and sanitation and certain general chemical actions involved in the work of morticians will be presented. Subjects of study:

1. General principles: (a) the science of chemistry, (b) the structure of matter, (c) the behavior of matter, (d) chemical action, (e) types of chemical change.
2. Inorganic chemistry: (a) typical nonmetallic elements, (b) solutions, (c) acids, bases, and salts, (d) ionization, (e) typical metallic elements, (f) naming of chemical compounds.
3. Organic chemistry: (a) classification, (b) structure, (c) reaction, (d) naming.
4. Physiological chemistry: (a) enzymes and enzyme action, (b) compounds usual in organized life, (c) respiratory processes, (d) digestive processes, (e) chemical actions in the tissues, (f) colloids.
5. Toxicology: (a) classification of poisons, (b) action in the body, (c) diagnosis of poisoning, (d) tests, (e) antidotes, (f) Minnesota law.
6. Chemical changes in cadavers: (a) signs of death, (b) rigor, (c) autolysis, (d) putrefaction, (e) adipocere, (f) tissue gas, (g) lividities.
7. Disinfection: (a) standardization, (b) chemicals and concentrations used, (c) methods, (d) calculations.
8. Embalming fluids: (a) ingredients, (b) chemical actions in the body, (c) testing, (d) compounding, (e) analysis, (f) calculations.

A.M.S.7f. Funeral Law. Three extension credits, 36 hours. Robert S. Carney, B.A., LL.B., Special Lecturer

Lectures on basic funeral law, mortuary jurisprudence, probation of estates, special and general administratorships, social security, life insurance forms, public and personal liability and other subjects of law pertinent to conducting a funeral service establishment.

A.M.S.8f,w,s. Funeral Management and Funeral Direction. Two extension credits, 36 hours. Twin Cities funeral directors, funeral service supply authorities and university instructors

These lectures are intended to acquaint the student with the best current practice in funeral management. They offer an opportunity to meet local morticians of long experience and high standing, and to acquire practical dependable information about the important aspects of operating a funeral establishment—an opportunity the value of which students will readily appreciate. The class is also given an opportunity to make field trips to local mortuaries, ceteries, casket and vault manufacturing plants. Arrangements are made for the class to attend—in groups of not more than two—local funerals that will better demonstrate the actual practice of the con-

duction of various types of funeral services. An attempt will be made to conduct actual clinics in local funeral homes to demonstrate the proper conducting of funeral services, at which time the student will actually participate in several phases of funeral directing. The following are some of the topics presented in this course:

- | | |
|---|---|
| 1. Merchandising | 9. Personnel relations |
| 2. Ethics and public relations | 10. Cost and overhead problems |
| 3. The Episcopal service | 11. Cemetery procedure |
| 4. The Catholic service | 12. Advertising |
| 5. The Fraternal service | 13. The funeral director's place in his community |
| 6. The military service | 14. State and national associations |
| 7. Funeral arrangements | 15. Public attitude toward funeral service |
| 8. Metals and woods used in mortuary practice | |

A.M.S.9f,w,s. Pathology. Nine extension credits, 96 hours. James R. Dawson, M.D., Professor of Pathology and assistants

Lectures on gross pathology, with demonstrations. Attendance at autopsies when arrangements can be made.

A.M.S.10f,w,s. Practical Embalming, 12 extension credits, 170 hours. Robert C. Slater, Special Lecturer and Licensed Embalmer

Lectures, demonstrations, and other visual presentations, laboratory practice, and clinical work. Class participation in actual embalming will be emphasized. Subjects of study will include the following:

- | | |
|------------------------------------|--------------------------------------|
| 1. Scope of profession | 7. Violent deaths |
| 2. Modes of death | a. Poisons |
| 3. Signs of death | b. Gunshot wounds |
| a. Livoris mortis | c. Mutilated cases |
| b. Algor mortis | 8. First call |
| c. Rigor mortis | 9. Pressure injection |
| d. Decomposition and putrefaction | 10. Analysis of cases |
| 4. Discoloration | a. Tissue gas and gas gangrene |
| a. Cause | b. Edema |
| b. Prevention | c. Jaundice |
| c. Removal | d. Frozen bodies |
| 5. Embalming | e. Burns |
| a. Pre-embalming technique | f. Communicable diseases |
| b. Arterial | g. Preparation for transportation |
| c. Penetration | h. Autopsies |
| d. Hypodermic | 11. Embalming hygiene |
| e. Cavity | 12. Funeral directing and management |
| 6. The arterial and venous systems | a. Pricing |
| a. Superficial venous blood return | b. Salesroom arrangement and selling |
| b. Deep venous blood return | c. Advertising |
| c. Arteries employed in embalming | |

A.M.S.10Af,w,s. Practical Embalming Clinics. T. F. Saholt, Licensed Embalmer

Throughout the year all students will be subject to call to attend clinical calls made available through the courtesy of Twin Cities funeral directors, the local morgues or other agencies. These clinics are under the direction of Mr. T. E. Saholt, licensed embalmer. Every

possible opportunity will be given students to assist in the preparations; and attendance at and participation in at least six such clinical calls is a necessary qualification for the successful completion of the course.

A.M.S.11f. Psychology. Two extension credits, 24 hours. Wendell White, Ph.D., Associate Professor of Psychology

This course will present those principles of psychology most helpful to the prospective funeral director in dealing tactfully with the people with whom he comes in contact—especially those under severe emotional stress

A.M.S.12w. Public Health. Three extension credits, 36 hours

The Minnesota State Board of Health staff gives a series of public health lectures arranged by the Executive Officer, A. J. Chesley, M.D., and the following:

J. W. Brower, LL.B., M.A., Chief, Section of Departmental Administration, and representative of the Board on the Embalmers and Funeral Directors Committee of Examiners

Dean S. Fleming, M.D., M.P.H., Chief, Section of Preventable Diseases

Paul Kabler, Ph.D., M.D., M.P.H., Chief, Section of Medical Laboratories

Herbert M. Bosch, M.P.H., Chief, Section of Environmental Sanitation

Robert N. Barr, M.D., M.P.H., Chief, Section of Special Services

These lectures are designed to acquaint the student with the basic principles and practices of public health administration and to survey the organization and functions of the various agencies at the federal, state and local levels of government which are engaged in carrying on activities and programs in the preservation and protection of the public health. The role of the mortician with reference to these activities is considered, and the regulatory procedures as applied to the removal, preparation and disposal of dead human bodies are examined, illustrated and explained. The course offers the future embalmer and funeral director valuable orientation in his responsibilities for the health of the community in which he will practice and in his relationships with the local boards of health and with the State Board of Health. Subjects of study will include:

1. Public health organizations and functions
2. Public health laws and regulations
3. Vital statistics
4. Communicable disease control
5. Environmental sanitation
6. Special public health problems; hospital services, maternal and child health, mental health, public health education

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Division of Physical Medicine
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DIVISION OF PHYSICAL MEDICINE

COURSES IN PHYSICAL AND OCCUPATIONAL THERAPY

Admission Requirements

Applicants for admission to the freshman year of either the Course in Physical Therapy or the Course in Occupational Therapy must meet the entrance requirements of the College of Science, Literature, and the Arts. (See *Bulletin of General Information*.) Graduates of accredited high schools may enter at the beginning of any quarter, but the curricula as outlined are based on entrance in the fall quarter. If a student enters at any other quarter, it may be necessary to attend Summer Sessions to make up the irregularities thereby incurred in the program. The sequence of courses in the last two years cannot be altered and must begin in the fall quarter.

At the end of the sophomore year, students having a total of 90 quarter credits, including the required courses listed on page 7 for physical therapy and on pages 8 and 9 for occupational therapy, or their equivalents, may make application for entrance into the Division of Physical Medicine of the Medical School. Quality credits earned at Minnesota will count toward entrance. Application blanks may be obtained in either the Physical Therapy or the Occupational Therapy office, and they must be filed, complete with transcripts of college work to date, before July 1 of the year in which the student expects to enter one of the courses as a junior. Selection of students will be based on scholastic standing (particularly in the basic science courses for physical therapy) and upon character and personal fitness as disclosed by personal interview. Selections will be made as early as possible and students notified promptly. Those accepted will then transfer into the Medical School, Division of Physical Medicine, Course in Physical Therapy or Course in Occupational Therapy. Students attending institutions other than the University of Minnesota during their freshman and sophomore years must meet the same requirements for admission. Nonresidents note section on Admission in the *Bulletin of General Information*.

The Council on Education of the American Medical Association has not sanctioned the acceptance for credit of courses in physical medicine taken in the armed forces; however, blanket credits earned in the service may count as electives toward graduation.

Graduates of courses from hospitals offering three years of nursing will receive forty-five credits (one year's work) to be applied toward the physical or occupational therapy degree. If anatomy and bacteriology were taken in the nursing work, the student will be exempt from those prerequisites to the physical and occupational therapy courses.

Each student must pass a physical examination in the Health Service of the University. Any student who is not considered physically able to do the work required of physical or occupational therapists may be rejected.

Further information on the admission requirements may be obtained from the Physical Therapy office, 204 Temporary building West of the Hospitals (TWH), for the Course in Physical Therapy, or from the Occupational Therapy office, 209 TWH, for the Course in Occupational Therapy.

Fees

The quarterly fee for the freshman and sophomore years is \$30 for residents of Minnesota and \$75 for nonresidents, payable at the beginning of each quarter. Tuition for the last two years, in the Medical School, is \$42 for residents and \$90 for nonresidents.

Applicants who are not legal residents of Minnesota must pay a credential examination fee of \$5 at the time of application for admission to the University.

In addition to tuition, each student is charged an incidental fee of \$11.95 each quarter. Laboratory fees may be instituted or modified at any time by action of the Board of Regents.

A matriculation deposit of \$5 is required, payable with the tuition of the first quarter in residence, as a guarantee for the return and protection of university materials and equipment, the balance to be refunded automatically upon the student's withdrawal or graduation.

During the junior year the student is expected to provide white uniforms and white duty shoes for the clinical practice work.

For more detailed information concerning the cost of attending the University of Minnesota, see the *Bulletin of General Information*.

Scholarships and Loans

Scholarships to the University of Minnesota Course in Physical Therapy are obtainable through the National Foundation for Infantile Paralysis, Inc. To be eligible for such a scholarship in the senior year, the student must satisfy the requirements of the Foundation. Further information may be obtained from the office of the National Foundation for Infantile Paralysis, Inc., 120 Broadway, New York, 5.

Information on loans from the University of Minnesota may be obtained from the Bureau of Student Loans and Scholarships, 211 Eddy Hall, University of Minnesota.

PHYSICAL THERAPY

GENERAL INFORMATION

Physical therapy is that part of medical science concerned with the treatment of disease or injury by physical means. It includes the use of heat, cold, light, water, electricity, massage, exercise, rest, and climate. Many of the treatment techniques are carried out by trained personnel called physical therapists who work under the direction of physicians but are not themselves medically trained. They stand in much the same position in relation to the doctor as do nurses, occupational therapists, or medical technologists, assisting him and carrying out treatments under his supervision.

Because of the complexity of equipment to be used and the exacting nature of the duties to be performed, it is essential that the physical therapist be adequately trained in the fundamental sciences. A satisfactory foundation of anatomy, physiology, pathology, physics, and psychology must be laid upon which may be built a functional knowledge of the phases of medicine, surgery, and neurology, which are necessary for the intelligent application of physical therapeutic techniques in the treatment of disease and injury.

It is the purpose of the course described in this bulletin to prepare such well-trained physical therapists to take their place in the wide field of medicine and perform their duties intelligently and efficiently to the benefit of the patient.

The University of Minnesota offers a four-year curriculum leading to the degree of bachelor of science in physical therapy. This course is primarily designed for students who have had no previous training or experience in physical therapy.

Recognition of such training is afforded by registration with the American Registry of Physical Therapy Technicians which is administered jointly by the American Medical Association and the American Congress of Physical Medicine. Its headquarters are at 30 North Michigan Avenue, Chicago, Illinois. This registry qualifies graduates of accredited schools of physical therapy by examination and provides a national bureau to regulate the standards of physical therapists. All graduates of the University of Minnesota Course in Physical Therapy are required to pass the Registry examination and become registered technicians. They also join the American Physical Therapy Association, a national organization interested in advancing the standards and interests of physical therapists.

CURRICULUM

The work of the first two years of the Course in Physical Therapy is taken in the College of Science, Literature, and the Arts. Fifteen credit hours per quarter is considered the average student load. Starred (*) courses are required for entrance into the Course in Physical Therapy. If the work is taken at the University of Minnesota, the elective courses listed for the freshman and sophomore years are suggested. Students who have taken the first two years of work at other institutions must have taken the equivalents of these courses. It is recommended that prospective students take physics in high school, and it is necessary that they take algebra and geometry.

Physical therapy students are required to take a minor consisting of either 18 credits in one field or 9 credits in each of two fields. As a general rule, one of the split minors must be taken in Senior College courses (those numbered 50 or above). However, if this is impracticable, a minor, consisting of a program of 18 credits may be worked out with an adviser, in the college in which the minor work is taken.

FRESHMAN YEAR

<i>Fall Quarter</i>		<i>Winter Quarter</i>		<i>Spring Quarter</i>	
	Credits		Credits		Credits
*English 4 or A	3-5	*English 5 or B	3-5	*English 6 or C	3-5
*Zoology 1	3	*Zoology 2	3	*Zoology 3	4
*Physics 1 or 1a	3-4	*Physics 2 or 2a	3-4	*Physics 3 or 3a	3-4
Humanities 1	5	Humanities 2	5	Humanities 3	5
	<hr/>	Public Health 3	2	Public Health 4	2
	14-17		<hr/>		<hr/>
			16-19		17-20

SOPHOMORE YEAR

<i>Fall Quarter</i>		<i>Winter Quarter</i>		<i>Spring Quarter</i>	
	Credits		Credits		Credits
*Chemistry 1	4	*Chemistry 2	4	Child Welfare 40	3
*Anatomy 3 or 4†	4-5	*Psychology 2	3	Psychology 3	3
*Psychology 1	3	Bacteriology 53	5	*Physiology 4	4
Electives	5-8	Electives	3-6	Nursing 2B	1
	<hr/>		<hr/>	Electives	4-5
	16-20		15-18		<hr/>
					15-16

JUNIOR YEAR

<i>Fall Quarter</i>		<i>Winter Quarter</i>		<i>Spring Quarter</i>	
	Credits		Credits		Credits
Anatomy 58, Anatomy of the Extremities	5	Physiology 60, Human Physiology	6	P. Chem. 50, Physiological Chemistry	4
P.M. 50, Physics for Physical Therapy	2	P.M. 70, Theory and Technique of Massage	3	Pathology	3
P.M. 60, Theory and Technique of Thermo-, Photo-, Hydro-, and Electrotherapy	5	P.M. 83, Theory and Technique of Muscle Function and Measurements and Tests	5	P.M. 61, Theory and Technique of Physical Medicine as Applied to Medical Sciences§	5
P.M. 57, Ethics and Administration	1	Electives	3-4	P.M. 63, Junior Clinic in Physical Medicine	1
Electives	3-4		<hr/>	Electives	3-4
	<hr/>		17-18		<hr/>
	16-17				16-17

SENIOR YEAR

<i>Fall Quarter</i>		<i>Winter Quarter</i>		<i>Spring Quarter</i>	
	Credits		Credits		Credits
Neurology 171A-B, Psychiatry and Neurology	4	P.M. 58, Asepsis, Bandaging, and Contagious Technique	2	P.M. 90, Conference	1
P.M. 65, Theory and Technique of Muscle Re-education	5	P.M. 1, Orientation to Occupational Therapy	1	P.M. 91, Clinical Practice	18
P.M. 69, Anatomy Applied to Techniques of Treatment of Poliomyelitis	2	P.M. 68, Applied Anatomy	3		<hr/>
P.M. 82, Physiology of Muscles, Nerves, and Circulation	3	P.M. 80, Theory and Technique of Therapeutic Exercises	5		19
Electives	3	P.M. 64, Senior Clinic in Physical Medicine	1		<hr/>
	<hr/>	Electives	3-4		
	17		<hr/>		
			13-15		

† May be a combination of anatomy and physiology if anatomy is not given alone at another college.

§ Includes observation and clinical practice.

OCCUPATIONAL THERAPY

GENERAL INFORMATION

Occupational therapy is that part of the medical sciences which employs mental and physical activities as remedial treatment. Occupational therapists work under the direction of a physician and use arts and crafts, educational, recreational, and prevocational activities in aiding recovery from disease or injury. Occupational therapy clinics in hospitals are used for therapeutic purposes and as laboratories to explore skills and furnish tryout experience for patients in the process of rehabilitation.

Occupational therapy is a profession which offers unlimited opportunities since the demand for well-qualified therapists is greater than the supply. Mental hospitals, tuberculosis sanatoriums, general, orthopedic, and children's hospitals, schools for the blind, deaf and feebleminded, rehabilitation agencies, curative workshops, homes for the aged, and homebound services employ occupational therapists.

The University of Minnesota offers an occupational therapy curriculum of four academic years plus one quarter, which is given in the College of Science, Literature, and the Arts, and in the Medical School. Upon completion of the prescribed curriculum, students receive the degree of bachelor of science in occupational therapy.

The Course in Occupational Therapy is approved by the Council on Medical Education and Hospitals of the American Medical Association, and the American Occupational Therapy Association. Graduates are eligible to become registered occupational therapists by taking the national registration examination given twice a year by the American Occupational Therapy Association. Registered occupational therapists are urged to become members of this organization whose purpose it is to promote the use of occupational therapy, to advance standards of education and practice, to encourage research, and to engage in other activities advantageous to the profession and its members.

CURRICULUM

The work of the first two years of the Course in Occupational Therapy is taken in the College of Science, Literature, and the Arts. If the work is taken at the University of Minnesota, the courses listed for the freshman and sophomore years are required. Students who have taken the first two years of work at other institutions must have taken the equivalents of these courses. It is recommended that prospective students take physics or chemistry and art in high school.

The curriculum includes 10 months of clinical training in various types of hospitals or services such as mental, tuberculosis, general, orthopedic, and children's hospitals, rehabilitation agencies, etc. During this period students work a full day which includes attendance at lectures, staff meetings and clinics, and are under the supervision of a qualified registered occupational therapist. Maintenance is usually provided at clinical training centers.

FRESHMAN YEAR

<i>Fall Quarter</i>	Credits	<i>Winter Quarter</i>	Credits	<i>Spring Quarter</i>	Credits
English 4 or A	3-5	English 5 or B	3-5	English 6 or C	3-5
Zoology 1	3	Zoology 2	3	Zoology 3	4
Humanities 1	5	Humanities 2	5	Humanities 3	5
Art 1, Introduction	4	Art 11, Design and Drawing	5	Art 12, Design and Drawing	5
<hr style="width: 50px; margin-left: 0;"/>	15-17	<hr style="width: 50px; margin-left: 0;"/>	16-18	<hr style="width: 50px; margin-left: 0;"/>	17-19

SOPHOMORE YEAR

<i>Fall Quarter</i>		<i>Winter Quarter</i>		<i>Spring Quarter</i>	
	Credits		Credits		Credits
Psychology 1	3	Bacteriology 1	4	Anatomy 4	5
Sociology 1	5	Psychology 2	3	Physiology 4	4
Art 43, Design Work- shop	3	Art 44, Design Work- shop	3	Art 45, Design Work- shop	3
Art 87, Weaving	3	Art 88, Weaving	3	Art 95, Ceramics	3
Public Health 3.....	2	Child Welfare 40	3	Art 99, Leather and Textile Design	3
P.M. 1, Orientation to Occupational Therapy	1	Physical Education	1½		
	<hr/>		<hr/>		<hr/>
	17		17½		18

JUNIOR YEAR

<i>Fall Quarter</i>		<i>Winter Quarter</i>		<i>Spring Quarter</i>	
	Credits		Credits		Credits
Anatomy 58, Anatomy of the Extremities.....	5	Psychology 145, Abnor- mal Psychology	3	P.M. 73, Theory of Occupational Therapy	2
Psychology 144, Abnor- mal Psychology	3	P.M. 72, Theory of Occupational Therapy	3	P.M. 74, Therapeutic Recreation	1
P.M. 71, Theory of Occupational Therapy	2	P.M. 83, Theory and Technique of Muscle Function and Measure- ments and Tests	5	P.M. 77, Orthopedics for Occupational Therapists	3
Neurology 171A-B, Psychiatry and Neurology	4	P.M. 76, Techniques of Occupational Therapy	3	P.M. 75, Plastic Processes	3
Art 10, Photography.....	3	P.M. 92, Preliminary Hospital Practice in Occupational Therapy	3	P.M. 61, Theory and Techniques of Physical Medicine Applied to Medical Sciences	5
	<hr/>		<hr/>	P.M. 63, Junior Clinic in Physical Medicine	1
	17		17	Public Health 60, Tuberculosis	2
					<hr/>
					17

TENTH QUARTER

(I and II Summer Sessions)

P. M. 94 Clinical Training--18 credits

SENIOR YEAR

<i>Fall Quarter</i>		<i>Winter Quarter</i>		<i>Spring Quarter</i>	
	Credits		Credits		Credits
P.M. 55, Process of Rehabilitation	2	P.M. 95, Clinical Training	18	P.M. 96, Clinical Training	18
P.M. 78, Principles and Practice of Occupa- tional Therapy	3				
Art 143, Jewelry.....	3				
Electives	7				
	<hr/>				
	15				

DESCRIPTION OF COURSES

- F.M. 1. Orientation to Occupational Therapy. Survey of field, history, and development. Detailed tour of University Hospitals; field trips to other hospital occupational therapy departments; demands of the profession; ethics and etiquette. (1 cred.)
- P.M. 50. Physics for Physical Therapy. Mechanics, heat, light, and electricity as applied to physical medicine. (2 cred.)
- P.M. 55. Process of Rehabilitation. Lectures and recitation on function of social and educational agencies concerned with rehabilitation of the handicapped; public laws; hospital programs; job opportunities and industrial trends. (2 cred.)
- F.M. 57. Ethics and Administration. Lectures covering appropriate conduct of the physical therapist. Orientation toward institutional contacts and related organizations. (1 cred.)
- P.M. 58. Asepsis, Bandaging, and Contagious Technique. Lecture, demonstration, and practice. (2 cred.)
- P.M. 60. Theory and Technique of Thermo-, Photo-, Hydro-, and Electrotherapy. Lectures, demonstrations, and clinical application. (5 cred.)
- P.M. 61. Theory and Technique of Physical Medicine Applied to Medical Sciences. Lectures and observations in fields related to physical medicine; includes surgery, medicine, dermatology, orthopedics, pediatrics, and neurology. (5 cred.)
- P.M. 63. Junior Clinic in Physical Medicine. Correlation clinic. Presentation of hospital cases with emphasis on therapeutic problems to be treated by the occupational and physical therapist. (1 cred.)
- P.M. 64. Senior Clinic in Physical Medicine. Continuation of Course 63. (1 cred.)
- P.M. 65. Theory and Technique of Muscle Re-education. Instruction and clinical practice with emphasis on treatment of poliomyelitis. (5 cred.)
- P.M. 68. Applied Anatomy. Review of joint structures, muscles, and function. Diseases and injuries of bones and muscles causing impairment of function and deformity are viewed in relation to physical medicine. (3 cred.)
- P.M. 69. Anatomy Applied to Techniques of Poliomyelitis. Résumé of the various concepts and treatment. (2 cred.)
- P.M. 70. Theory and Technique of Massage. Methods of applying various types of massage, their physiological effects, and therapeutic indications. Laboratory demonstration and practice. Supervised clinical practice. (3 cred.)
- P.M. 71-72-73. Theory of Occupational Therapy. Review of history and development; study of present trends; techniques and correlation of theory with practical application in the treatment of disease and orthopedic conditions; function of in-hospital rehabilitation programs, departments participating; hospital and department organizations; craft analysis; study of hobbies, recreational activities, and bibliotherapy. (7 cred.)
- P.M. 74. Therapeutic Recreation. Recreational activities for hospital and convalescent patients, such as music, active sports, games, etc. (1 cred.)
- P.M. 75.† Plastic Processes for Occupational Therapy Majors. (3 cred.)
- P.M. 76. Techniques of Occupational Therapy. Laboratory review of techniques used in hospitals with discussion of adaptations for specific disabilities. Craft analysis. (3 cred.)
- P.M. 77. Orthopedics for Occupational Therapists. Adaptation of occupational therapy equipment to abnormal orthopedic conditions. (3 cred.)

† A fee of \$3.00 is charged for this course.

- P.M. 78. Principles and Practice of Occupational Therapy. Practical experience in the adaptation of occupational therapy equipment for patients with orthopedic or surgical conditions in clinic or hospital. Development of techniques of interview and ward services. (2 cred.)
- P.M. 80. Theory and Technique of Therapeutic Exercises. The application of directed movement as an aid in the treatment of altered functions. Laboratory demonstration and practice. Supervised clinical practice. (4 cred.)
- P.M. 82. Physiology of Muscles, Nerves, and Circulation. Physiological basis for physical therapy. (3 cred.)
- P.M. 83. Theory and Technique of Muscle Function and Measurements and Tests. Review of muscles and joints in regard to anatomy and physiological function. Analysis of body mechanics. Theory and practice of muscle testing and joint measurement. (5 cred.)
- P.M. 90. Conference. Discussion of the problems arising from clinical practice in the field. (1 cred.)
- P.M. 91. Clinical Practice. Clinical application of techniques under supervision in the physical therapy departments of the affiliated hospitals. (18 cred.)
- P.M. 92. Preliminary Hospital Practice in Occupational Therapy. Directed clinical training in either pediatrics or neuropsychiatry. Lectures by supervising nurse on patients' charts and records; aseptic techniques; discussion of suitable projects for individual patients; occasional attendance at staff meetings in pediatrics, regular attendance at neurology staff meetings. (3 cred.)
- P.M. 93. Preliminary Hospital Practice. Advanced clinical practice. Directed practical work in occupational therapy at University Hospitals. Medical lectures on polio, sight and hearing disabilities. (3 cred.)
- P.M. 94-95-96. Clinical Training. At least 10 months are devoted to clinical training at affiliated hospitals. (18 cred. per quarter.)
- P.M. 98. Special Problems in Research in Physical Medicine. (Cred. ar.) Advisers: Kottke, Kubicek.