

College of Osteopathic Medicine

Throughout its history, the College of Osteopathic Medicine (COM) has maintained a tradition of dynamic growth and academic excellence. Founded in 1898 as the Dr. S. S. Still College of Osteopathy, the College was first housed in a simple two-story building. The first class of 40 students followed a curriculum based on the osteopathic concept that good health is an outgrowth of the proper functioning of all body systems.

Today students follow a four-year curriculum that prepares them to become osteopathic physicians through an integrated program of lectures, laboratories and clinical experiences in hospitals and ambulatory care facilities.

Campus facilities have grown from a single building in downtown Des Moines – which was home to the College from 1927 to 1972 – to an expansive education complex occupying 24 acres. In addition to the on-campus clinic, core clinical rotations have been established with hospitals throughout Iowa and the midwest.

While gaining strength from the past, the College sees in the future an increasing opportunity to develop outstanding osteopathic physicians to provide health care to the people of Iowa and the nation. To achieve these goals, the educational program will continue to emphasize a comprehensive approach to patients and their health problems. Although the importance of well-trained primary care osteopathic physicians (family medicine, internal medicine and pediatrics) is a basic tenet of the osteopathic medical philosophy, our students also explore careers in other specialties, such as emergency medicine, surgery, obstetrics and gynecology and anesthesiology.

Mission

To educate tomorrow's osteopathic physicians, health educators and scientists in a collaborative environment where the principles of health, wellness, and research foster effective, professional and empathic care of individuals and populations.

Vision

To position the College as a leader in medical education and health by pursuing and meeting the highest standards of academic and clinical achievement.

Accreditation

The College of Osteopathic Medicine is accredited by the Council of College Accreditation (COCA) of the American Osteopathic Association. The Council is recognized by the U.S. Department of Education and the Council for Higher Education Accreditation as the specialized accrediting body for osteopathic medical education. As an accredited college, COM is a member of the American Association of Colleges of Osteopathic Medicine (AACOM).

STUDENT/ACADEMIC SERVICES

Books & Equipment

Doctor of Osteopathic Medicine Program – Each medical student must obtain a stethoscope, sphygmomanometer and other diagnostic instruments as recommended by the faculty during the first year. Students may purchase books, instruments and supplies at Matthew's Bookstore, located on the first floor of the Student Education Center. A first-year student should allot \$3,000 for books and equipment.

Master of Science in Anatomy – Each anatomy student must obtain materials as recommended by the faculty during the first year. Students may purchase books, instruments and supplies at Matthews Bookstore, located on the first floor of the Student Education Center. A first-year student should allot \$1,000 for books and equipment.

Master of Science in Biomedical Sciences

– Each biomedical sciences student must obtain materials as recommended by the faculty during the first year. Students may purchase books, instruments and supplies at Matthews Bookstore, located on the first floor of the Student Education Center. A first-year student should allot \$500 for books and equipment.

Food Services

Summerfield's Café, located on the ground floor of the Student Education Center, provides food service during breakfast and lunch hours. A coffee bar is open extended hours for students' convenience. Vending machines are located on the lower level of the Academic Center, in Des Moines University Clinic, on the ground floor of the Student Education Center and in the main level of Ryan Hall.

Housing

While on-campus housing is not available at DMU, the Greater Des Moines area offers a variety of affordable housing options, many of which are within walking distance of the campus. The University's website links students to housing opportunities.

Student Health Services

Student Health Services, located in Des Moines University Clinic, offers free basic health care to full-time students enrolled in the osteopathic, podiatric, physical therapy, physician assistant, anatomy or biomedical sciences programs. Immediate family members are also eligible. Services include routine health care similar to a family practice setting. Allergy shots and a limited number of laboratory services are provided free of charge. Services provided in other departments of the Clinic will be billed at full charge. Student Health Services is open 8 a.m. – 5 p.m., Monday through Friday. Noon hours are reserved for students' urgent health care needs.

Educational Support Services

Student Counseling and Diversity Services are located within the Division of Educational Support Services. Students are encouraged to utilize these services to help navigate the

internal and external stressors of graduate school.

Student Counseling – The University realizes that students may be faced with unpredictable challenges and pressures that may interfere with their academic, professional and personal wellness. Students who are facing such barriers are urged to seek the services of student counseling. The dedicated staff members in the Student Counseling Office are professionally trained and licensed to educate students on intervention strategies when confronted with relationship difficulties, depression, anxiety, substance abuse, limited test-taking and study skills and other emotional and/or academic difficulties. There is no limit on number of sessions and insurance is not needed. All services provided by student counseling are free and confidential.

Diversity Services – The University is committed to fostering a University community and campus climate that values and actively supports inclusiveness and diversity. This division of Educational Support Services promotes programming designed to increase understanding and appreciation of diverse cultures, attempting to reduce prejudice, educate and promote social justice. This office also helps students to maneuver and interpret policies and regulations regarding visas, insurance and other immigration-related documents.

Child Care – Dependent children of students and employees receive priority consideration for openings as they become available at Children's Garden childcare center. The center is located at Wesley Acres Retirement Community adjacent to the DMU campus. Students interested in this service should contact the office of Student Services. The University website also provides a link to other online resources for those seeking childcare.

Faculty Advisor

All students are assigned a faculty advisor who provides assistance, advice and counsel as needed, and who serves as a liaison between the student and the academic and administrative communities. Based upon students' needs and requests, faculty advisors monitor academic achievement and provide guidance and assistance in meeting academic requirements, serve as mentors to students, assist students with study and coping skills, write letters of recommendation and inform appropriate departments of student concerns.

Career Planning

The College of Osteopathic Medicine, in the office of Clinical Affairs, utilizes the Careers in Medicine Program to assist students in career planning.

Student Handbook

The Student Handbook is available online and supplements the information in this catalog, providing information on the policies, procedures and services that guide students during enrollment at DMU. New students are introduced to the policies and procedures contained in the Handbook at orientation.

Transcripts and Confidentiality

A written request and payment of the appropriate fee by the student is required for each transcript. Written consent of the student is required for disclosure of other personally identifiable information from the education records of the student, other than directory information, except for disclosure of such other records to (1) University officials, including faculty, who have education interests; (2) officials of another school or school system in which the student seeks or intends to enroll; (3) certain authorized representatives of state and federal agencies; (4) persons and/or organizations designated by the University to perform specified management or administrative tasks; and (5) lenders or lending agencies to whom a student has applied for financial aid, as may be necessary for such purposes. Directors of medical education requiring information for internship recommendations must submit a written request to the Registrar's Office.

The University will, on request, provide to any student the content of his or her educational records to ensure that the information is accurate and is not misleading or otherwise in violation of the privacy or other rights of the student. Transcripts will not be issued to, or on behalf of, any student or graduate who has delinquent financial obligations to the University. It is the policy of the University to comply fully with the rules, regulations and intent of Section 438 of the Family Educational Rights and Privacy Act of 1974, otherwise known as the Buckley Amendment (see next page). Notification of Rights: Family Educational Rights and Privacy Act (FERPA) FERPA affords students certain rights with respect to their educational records.

They are:

- 1) The right to inspect and review the student's education records within 45 days of the day the University receives a request for access. Students should submit to a

University official a written request that identifies the record(s) they wish to inspect. If the records are not maintained by that official, he or she will advise the student of the correct official to whom the request should be addressed. The appropriate University official will make arrangements for access and notify the student of the time and place where the records may be inspected.

- 2) The right to request the amendment of the student's education records that the student believes are inaccurate or misleading. Students may ask the University to amend a record that they believe is inaccurate or misleading. They should write the University official responsible for the record, clearly identify the part of the record they want changed and specify why it is inaccurate or misleading. If the University decides not to amend the record as requested by the student, the University will notify the student of the decision and advise the student of his or her right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing.
- 3) The right to consent to disclosures of personally identifiable information contained in the student's education records, except to the extent the FERPA authorizes disclosure without consent. One exception that permits disclosure without consent is disclosure to school officials with legitimate educational interests. A school official is a person employed by the University in an administrative, supervisory, academic or research or support staff position (including law enforcement and health staff); a person or company with whom the University has contracted (such as an attorney, auditor or collection agent); a person serving on the grievance committee or assisting another school official in performing his/her duties. A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his/her professional responsibility. The second exception that permits disclosure without consent is "directory information." Data considered by DMU to be directory information is listed on the "Release of Student Educational & Directory Information" form, which can be requested at the Office of the Registrar.
- 4) The right to file a complaint with the U.S. Department of Education concerning alleged failures by DMU to comply with requirements of FERPA. Address: Family

Doctor of Osteopathic Medicine Program

THE OSTEOPATHIC PROFESSION

Osteopathic medicine is a philosophy of health care that emphasizes the interrelationships of the body's systems in the prevention, diagnosis and treatment of illness, disease, and injury. The Doctor of Osteopathic Medicine (D.O.) is trained to use all clinical/scientific modalities to maintain and restore the health of patients.

Based upon an increasing body of scientific evidence, osteopathic medicine emphasizes four main principles:

1. **The human body is a unit, and all body systems are interdependent. A disturbance in one system may alter the functions of other body systems.**
2. **The body possesses self-regulatory mechanisms that provide resistance to, and recovery from, injury and disease.**
3. **Structure and function are inter-related, providing the basis for osteopathic manual treatment.**
4. **Appropriate prevention and treatment of all disease processes is based on an understanding of the body unit, its self-regulatory mechanisms and the relationship between structure and function.**

The distinctive feature of osteopathic medicine is the recognition of the relationship between structure and function of the body. The osteopathic physician (D.O.) uses the developed skills of observation, definitive history taking, clinical judgment, manual medicine and other standard diagnostic and therapeutic procedures to recognize and treat pre-disease and disease states of the body. Treatment of the whole patient, rather than the disease process, is the primary consideration.

ADMISSION POLICIES

The admission policies of the Doctor of Osteopathic Medicine program ensure selection of students with appropriate preparation to meet the rigors of the challenging curriculum in medical education. These policies define acceptable premedical education and designate admission procedures. All admission requirements must be completed prior to matriculation. Prospective students should carefully note specified deadlines. The practice of osteopathic medicine requires good communication skills, an understanding of individuals within their social environment, logical and quantitative thinking and a solid background in the sciences. To meet these requirements, students are encouraged to complete a diversified undergraduate program.

The application process culminates with a personal interview at Des Moines University. Because of limited openings, the Admission Committee invites only those candidates considered to have the greatest professional promise. The Committee bases decisions on academic achievement, activities, personality, character, motivation and promise shown by candidates. Advanced standing based on prior course work is not given.

Misrepresentation

Misrepresentation in, or omission from, admission credentials, particularly information concerning previous felony or misdemeanor convictions, will constitute improper behavior under the Student Evaluation Mechanism provisions of the COM Student Handbook.

Multiple Applications

Concerning students applying to the University for the first time: First-time entering students may apply to only one clinical program at a time. Multiple college or program applications will not be accepted or processed. *Dual degree (D.O./M.H.A., D.O./M.P.H., D.O./M.S.A., D.O./M.B.S.) is the only exception.

Concerning currently enrolled students: Enrolled students in the final year of their respective programs who anticipate completion of a DMU degree may apply for admission to another University program. If accepted, students are expected to complete the full curriculum in which they are currently enrolled. Students enrolled in another DMU program may not transfer into the D.O. Program. In order to be considered for admission to the D.O. Program, students must first withdraw from the other DMU program.

**Students who have been accepted to the D.O.*

Program may be eligible for a dual-enrollment option leading to a Master of Health Care Administration (M.H.A.) degree, a Master of Public Health (M.P.H.) degree, a Master of Science in Anatomy (M.S.) degree or a Master of Science in Biomedical Sciences (M.B.S.) degree. Students interested in pursuing a dual degree may take Health Care Administration or Public Health course work during the summer trimester prior to the start of D.O. classes. Applications for a dual degree in Anatomy or Biomedical Sciences will be available at the conclusion of the first semester of D.O. course work.

Minimal Technical Standards for Admission and Matriculation

The College of Osteopathic Medicine is pledged to the admission and matriculation of all qualified students and acknowledges awareness of laws that prohibit discrimination against anyone on the basis of race, color, religion, gender, national origin, ancestry, sexual orientation, age, disability, marital status, citizenship or any other characteristic protected by law. Regarding disabled individuals, the College will not discriminate against such individuals who are otherwise qualified, but will expect applicants and students to meet certain minimal technical standards as set forth herein. In adopting these standards, the College must keep in mind the ultimate safety of the patients its graduates will eventually care for. The standards reflect reasonable expectations of osteopathic medical students and physicians in performing common functions.

Technical Standards

The holder of a D.O. degree must have the knowledge and skills to function in a broad variety of clinical situations and to render a wide spectrum of patient care. In order to carry out the activities described below, candidates for the D.O. degree must be able to consistently, quickly and accurately integrate all information received, and must have the ability to learn, integrate, analyze and synthesize data.

A candidate for the D.O. degree must have abilities and skills of eight varieties, including: observation; communication; motor; sensory; strength and mobility; visual integration; intellectual, conceptual, integrative and quantitative; and behavioral and social. Technological accommodations can be made for handicaps in some of these areas, but a candidate must be able to perform in a reasonably independent manner.

1. Observation: Candidates and students must have sufficient vision to be able to observe demonstrations, experiments and labo-

ratory exercises in the basic sciences. They must be able to observe a patient accurately at a distance and close at hand.

2. Communication: Candidates and students should be able to speak, hear and observe patients in order to elicit information, examine patients, describe changes in mood, activity and posture and perceive nonverbal communications. They must be able to communicate effectively and sensitively with patients. Communication includes not only speech but also reading and writing. They must also be able to communicate effectively and efficiently in oral and written form with all members of the health care team.

3. Motor: Candidates and students should have sufficient motor function to execute movements reasonably required to provide general care and emergency treatment to patients. Examples of emergency treatment reasonably required of physicians are cardiopulmonary resuscitation, administration of intravenous medication, the application of pressure to stop bleeding, the opening of obstructed airways, the suturing of simple wounds and the performance of simple obstetrical maneuvers. Such actions require coordination of both gross and fine muscular movements, equilibrium and functional use of the senses of touch and vision.

4. Sensory: Since osteopathic candidates and students need enhanced ability in their sensory skills, it would be necessary to thoroughly evaluate for candidacy individuals who are otherwise qualified but who have significant tactile, sensory or proprioceptive disabilities. This would include individuals with significant previous burns, sensory motor deficits, cicatrix formation and many malformations of the upper extremities.

5. Strength and Mobility: Osteopathic treatment often requires upright posture with sufficient lower extremity and body strength; therefore, individuals with significant limitations in these areas would be unlikely to succeed. Mobility to attend to emergency codes and to perform such maneuvers as CPR is also required.

6. Visual Integration: Consistent with the ability to assess asymmetry, range of motion and tissue texture changes, it is necessary to have adequate visual capabilities for proper evaluation and treatment integration.

7. Intellectual, Conceptual, Integrative and Quantitative Abilities: Candidates and students must be able to concentrate, analyze and interpret data and make decisions within areas in which there is a reasonable amount of visual and auditory distraction. They must also perform these functions in a timely man-

ner and under a reasonable amount of stress since physicians are expected to be able to perform such duties in diverse clinical settings where others may be present and where there is a certain degree of noise. Candidates and students must be able to accurately write prescriptions, accurately perform basic mathematical functions and accurately and quickly read charts with minimal error in areas where there may be distractions. The practice of medicine demands the ability to integrate and process information promptly and accurately in a time-sensitive environment. Candidates must be able to draw on their store of knowledge in emergency situations and under time limitations.

8. Behavioral and Social Attributes: Candidates and students must possess the emotional health required for full utilization of their intellectual abilities, the exercise of good judgment, the prompt completion of all responsibilities attendant to the diagnosis and care of patients and the development of mature, sensitive and effective relationships with patients. Candidates and students must be able to tolerate physically taxing workloads, adapt to changing environments, display flexibility and learn to function in the face of uncertainties inherent in the clinical problems of many patients. Compassion, integrity, concern for others, interpersonal skills and interest and motivation are all personal qualities that will be assessed during the admissions and educational processes.

The College of Osteopathic Medicine will attempt to develop creative ways of offering the medical school curriculum to competitive, qualified disabled individuals. In doing so, however, the College must maintain the integrity of its curriculum and preserve those elements deemed essential to the education of an osteopathic physician.

ADMISSION REQUIREMENTS

A bachelor's degree from an accredited institution is required.

Required courses must be completed before registration. The minimum grades recommended for application are a 3.0 cumulative GPA and a 3.0 science GPA on a 4.0 scale, and at least a "C" in each of the six prerequisite areas.

Required Courses Min. Semester Hours
General Biology 8 hours, with lab
General Chemistry 8 hours, with lab
Organic Chemistry 4 hours, with lab

Physics.....8 hours, with lab
(or 4 hours physics with lab +3 hours of Statistics)
English: Comp/Literature/Speech6 hours
Biochemistry.....3 hours

NOTE: Meeting minimum requirements does not guarantee an interview or admission.

Recommended Courses: Cell Biology, Genetics, Anatomy (preferably human), Human Physiology, Microbiology/Immunology, Developmental Biology, Statistics, General Psychology.

Students must be able to successfully achieve the instructional goals of the College and pass both written and practical examinations in all areas, including physical diagnosis, patient care, osteopathic manual medicine, Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS). Refer to the technical standards in this section.

Residents of foreign countries wishing to apply for admission are advised to spend at least one year at an accredited college or university in the United States. During this time, students can become acclimated to the culture and academic practices of this country.

Permanent Residents

Applicants who are legal permanent residents of the U.S. are required to provide a copy of their permanent resident card ("green card") prior to admission. NOTE: Permanent residency status "pending" is not eligible for admission.

Non-U.S. Citizens

Applicants who are not U.S. citizens or permanent residents should review the information for international students on page 10.

APPLICATION PROCESS

Applications for the first year of study leading to the Doctor of Osteopathic Medicine degree are submitted through the American Association of Colleges of Osteopathic Medicine Application Service (AACOMAS), 550 Friendship Blvd., Suite 310, Chevy Chase, MD 20815-7231. Call (301) 968-4100 or visit www.aacom.org for more information.

The application must be completed online at <http://www.aacom.org>. Designate DMU as an institution to receive your application. The College strongly advises early application. AACOMAS generally begins accepting applications in May.

- Upon receipt of your AACOMAS file, we

will send you information for completing our online Supplemental Application if you meet the minimum criteria established by our Admission Committee. There is a \$50 non-refundable application fee. If you do not meet the minimum criteria, we will send you a letter of explanation.

- MCAT - In order to interview, we must have your MCAT scores, which cannot be more than 3 years old. Scores not more than 2 years old are preferred. MCAT information can be obtained at www.aamc.org/students/mcat.
- Supply one letter written by a non-related healthcare professional (physician, a nurse or volunteer coordinator) describing your exposure to patients and your ability to perform in a medical setting.
- Supply two letters of recommendation written by science professors who have taught you in their class. DMU will only accept letters from hard science instructors (biology, chemistry, physics). Letters from social science professors (psychology, sociology, anthropology, etc.), although welcome, will not count toward completing your file. OR supply one letter from a premedical or prehealth committee.

All letters of recommendation should be on the writer's letterhead and sent directly from the writer.

All completed applications are reviewed. A limited number of applicants are invited to the College for a personal interview. Offers of acceptance are based on a combination of academic records, the interview and letters of recommendation.

Special Application Processes

Qualified applicants may be eligible to apply for early acceptance or early enrollment (3+4) options. Applications for both of these options are available on the website. There is a non-refundable \$50 application fee.

The early acceptance option allows high academic-achieving students to apply, interview, and be conditionally accepted to the College while still completing undergraduate studies. It is designed for undergraduate sophomores and juniors who plan to earn a bachelor's degree prior to matriculation. Applicants seeking early acceptance can apply as early as January 1 of the sophomore year of undergraduate studies but no later than March 1 of the junior year.

Early enrollment (3+4) is an option for highly motivated, exceptional students who would like to begin medical school following their junior year of undergraduate studies but

prior to earning a bachelor's degree. The undergraduate institution must agree to award a bachelor's degree upon completion of the first year of the D.O. curriculum.

Qualifications, prerequisite course work and additional information can be found at www.dmu.edu/com.

PROCEDURES FOR ACCEPTED STUDENTS

Students accepted for admission to the College must:

- Submit an official transcript from each college or university attended along with a \$1,000 seat deposit in installment payments, which is applied toward tuition.
- Complete any required courses and a bachelor's degree prior to matriculation.
- Have a physical examination and complete an immunization report before registration. Students admitted shortly before classes begin will have four weeks to complete this requirement.
- Complete a criminal background check through Verified Credentials. Results must be released to DMU prior to matriculation. The cost of this process will be paid by the applicant.
- Have medical insurance coverage that provides comprehensive major medical benefits. Students must present proof of coverage at registration.
- Register for classes on the designated date.

Seat deposits are non-refundable. Tuition is refundable in accordance with the schedules published in this catalog. Refer to the section titled "Tuition and Financial Aid." No other refund schedule will apply. The University's Board of Trustees reserves the right to change tuition and fees at any time.

All correspondence and inquiries should be directed to: Des Moines University, COM Admission, 3200 Grand Ave., Des Moines, Iowa 50312-4198. Telephone 1-800-240-2767, ext. 1499, or (515) 271-1499. E-mail: doadmit@dmu.edu.

Transfer

Transfer into the Doctor of Osteopathic Medicine Program will be considered if the student meets the following criteria:

- Enrolled in a COCA or LCME accredited medical school,
- In good academic standing in the upper 50% of the class at the current medical school,
- Passed COMLEX I or NBOME (or USMLE I

if from an allopathic school) if requesting transfer at the completion of the second year,

- Have a cogent reason for requesting a transfer.

Eligible candidates can apply for consideration by submitting:

- A formal letter of request stating reasons for transfer,
- A letter of support from the Dean of the current medical school,
- Official transcripts from the current medical school and all other institutions attended,
- Official MCAT, COMLEX and USMLE score reports.
- An on-campus interview may be required.

A review of transcripts will determine what credit will be granted for prior course work as well as which DMU-COM courses will be required prior to graduation. All students approved for transfer into the D.O. Program must satisfy all of these requirements:

- Complete a criminal background check prior to transfer,
- Must be enrolled at DMU-COM for a minimum of two years,
- Meet all DMU-COM Osteopathic Manual Medicine (OMM) requirements prior to graduation,
- Meet all graduation requirements of the class they transfer into as specified in the Student Handbook,
- Must not have any felony convictions or had violations of professional or moral conduct.

Additional information regarding eligibility, application process, and requirements can be obtained by contacting the Enrollment Management office.

Graduate Study

Opportunities for graduate study may be available to qualified students. For additional information, contact the Dean's Office.

Dual Degree Program

Students who have been accepted to the D.O. Program may be eligible for a dual enrollment option leading to a Master of Health Care Administration (M.H.A.) degree, a Master of Public Health (M.P.H.) degree, a Master of Science in Anatomy (M.S.A.) degree or a Master of Science in Biomedical Sciences (M.B.S.) degree. Students interested in pursuing a dual degree may take Health Care Administration or Public Health course work during the summer trimester prior to the start of D.O. classes. Applications for a dual degree in Anatomy or

Biomedical Sciences will be available at the conclusion of the first semester of D.O. course work. Students interested in these options should contact Enrollment Management for additional information.

Rural Medicine Education Program

Students with an interest in underserved rural medicine may apply for tuition scholarships at the time of COM acceptance. In addition, any students with an interest in rural medicine may participate in a multi-year course of elective studies to enrich their medical education in preparation for a career in rural medicine.

Pathways of Distinction

At the end of the second year, students may apply for admission into Pathways of Distinction in Research or Medical Education. If accepted into either of these Pathways, the student and the associate dean of clinical affairs will work together to individualize the student's third- and fourth-year schedules to meet the certificate requirements.

CURRICULUM

The four years of osteopathic medical school preceding graduate medical education are divided into a preclinical and a clinical phase ("2 + 2" curriculum). The preclinical phase occupies the first two years, and the clinical phase occupies the third and fourth years. The first year of the curriculum is focused on fundamental scientific principles that support the study of medicine. The second year builds on the science foundation and offers an integrated organ system approach that includes basic and clinical science. The curriculum uses a combination of lectures, case-based discussion, small group discussion and laboratory exercises. Other features of our curriculum are:

- Intensive OMM training in years one and two.
- A wide selection of medical electives offered in years one and two.
- A large number of standardized patient encounters that correlate with the systems courses.
- A longitudinal personal wellness profile.
- Chronic care elective that allows students to follow a chronically ill patient during their time at DMU.
- A state-of-the-art human simulation lab that provides intensive training in a variety of clinical scenarios throughout the entire four-year curriculum.

- Opportunities for international rotations and global health service trips.

The clinical phase (84 weeks) of the curriculum begins in August of the third year and continues until graduation. The third and fourth years are spent in teaching hospitals, clinics and community service agencies to learn the practice of medicine in a clinical setting. These periods of instruction are called clerkships or clinical rotations and are discussed under the heading "The Clinical Years."

CURRICULUM OVERVIEW

Preclinical Phase

Year I

Behavioral Medicine
History of Medicine
Introduction to Medline and the Internet
Biochemistry and Molecular Genetics
Osteopathic Manual Medicine I
Anatomy
Cell and Tissue Biology
Neuroanatomy
Microbiology/Immunology
Physiology
Physical Diagnosis
Fundamentals of Patient Safety and Clinical Quality I (online)
Electronic Core Disaster Life Support (online)
Basic Life Support
Pathology
Introduction to Medical Ethics
Geriatrics

Year II

Fundamentals of Patient Safety and Clinical Quality II (online)
Clinical Reasoning and Simulation
Medical Pharmacology
Evidence-Based Medicine
Preventive Medicine/Nutrition
GI System
Cardiovascular System
Infectious Disease
Respiratory System
Hematology/Oncology
Endocrine System
Obstetrics/Gynecology
Renal System
Neurology
Psychiatry
Rheumatology/Orthopedics
Ophthalmology
ENT
Dermatology/Allergy
Osteopathic Manual Medicine II

Medical Ethics II and Legal Topics in
Clinical Medicine
Advanced Cardiac Life Support*
Neonatology Laboratory
Ophthalmology Laboratory
Gynecology Laboratory
ENT Laboratory
Basic Surgical Skills
Introduction to Clinical Clerkships
Clinical Reasoning

Electives

Advanced Dissections in Anatomy
Animal Assisted Therapy
Complementary & Alternative Medicine
Chronic Care
Clinical Research Methods/Ethics
Cranial Nerves – A Case-Based Approach
Cranial OMM
Diagnostic Strategies
Dissecting the Medical Drama Genre
Education for Physicians on End of Life Care
Exploring the Human Condition
Geriatrics Experience
Human Development
Images of Women in Popular Culture
Interviewing Skills for Enhanced Patient Care
Introductory Figure Drawing
Medical Spanish, Beginning
Medical Spanish, Intermediate
Medicine & the Arts
Mental Illness & the Cinema
Nutritional Survival 101 (Healthy Cooking)
Pain & Pain Management
Problem-Based Anatomy
Problem-Based Learning Biochemistry
Reproductive Health Choices
Rural Medicine
Spiritual & Religious Issues in Patient Care

* *Satisfactory completion of Advanced Cardiac Life Support (ACLS) is required for all D.O. students prior to beginning clinical rotations. Completion of the course results in certification by the American Heart Association at the provider level.*

Clinical Phase

Year III

Introduction to Health Systems & Policy
(online)
Family Medicine (8 weeks)
General Internal Medicine (4 weeks)
Surgery/Internal Medicine Subspecialty
(4 weeks)
Psychiatry (4 weeks)
General Pediatrics (4 weeks)
Obstetrics/Gynecology (4 weeks)
General Surgery (4 weeks)

Primary Care Selective (4 weeks)
Electives (8 weeks)
Two two-week Selectives (4 weeks)
Comprehensive Examination (1 week)

Year IV

Family Medicine (4 weeks)
International/Underserved Selective (4 weeks)
Electives (28 weeks)

YEAR I COURSES

Behavioral Medicine: Designed to introduce the student to the psychological, social, behavioral and cultural basis of clinical medicine, this course focuses on common patient problems and the circumstances that evoke important behavioral/emotional responses. The course serves as an introduction to managing these problems and assists the student in more effectively communicating with patients and peers. Students are introduced to theories of human development throughout the individual and family life cycle, and key transitions that may create individual/family stress. Students should develop increased insight into their own personal functioning and feelings. Each student participates in the Standardized Performance Assessment Laboratory (SPAL) with the goal of practicing communication skills introduced in the course.

History of Medicine: Presented in a lecture format at the beginning of the first year, this course deals with the broad spectrum of medicine and healing. Course work introduces the history of medicine from its earliest practices to the evolution of the osteopathic medical profession during the 19th and 20th centuries. The development of osteopathic medicine through the thought and practice of Andrew Taylor Still is emphasized.

Introduction to Medline and the Internet: Students learn how to do literature searches using accepted search engines and databases in the medical/health area. They also receive basic instruction in the use of computer and network facilities on campus.

Biochemistry and Molecular Genetics: An introductory molecular description of biological structure and function. Normal metabolism and gene expression are given the major emphasis. Several common genetic diseases and metabolic disorders serve to contrast normal and perturbed human biochemistry, as well as demonstrate the clinical implications of human biochemistry.

Osteopathic Manual Medicine I: Through lecture and laboratory experience, provides the student with a basic understanding of the science, philosophy and art of osteopathic manual medicine. Students are taught anatomical landmarks, palpation and range of motion for osteopathic diagnosis and manual treatment as related to the hip, pelvis, lumbar spine, thorax, cervical spine and temporomandibular joint.

Anatomy: The structure of the human body is presented in lecture, laboratory and computer learning models. Cadaveric dissection of each region of the body demonstrates normal form, common variations and pathological conditions. Normal function and clinical significance are stressed and reinforced through presentations by medical personnel. Additional lectures integrate the early development of body form and cellular organization with regional anatomy.

Cell and Tissue Biology: A comprehensive study of human cell biology, basic tissues and organ systems (e.g., cardiovascular, gastrointestinal, integumentary and lymphoid). Wherever possible, the study of histology is translated to clinical relevance. The course consists of regularly scheduled lectures and laboratory periods. In laboratories, students study the light and electron microscopic structure of cells, tissues and organs through atlases, prepared slides, virtual microscope and computer-assisted learning software.

Neuroanatomy: The structural and functional organization of the central nervous system is presented through lectures and laboratory/computer demonstrations on parts of the brain and spinal cord. The course covers the role of the brain and spinal cord in sensory perception and movement of the human body, including organs and behavioral responses. Wherever possible, case studies and appropriate syndromes are also presented.

Microbiology/Immunology: Basic principles and clinical relevance of immune mechanisms and fundamentals of host-pathogen interactions are presented. In addition, the course offers an introduction to the various subdisciplines of microbiology, with emphasis on facts and principles pertinent to the broad requirements for understanding infectious diseases. Bacterial, mycotic, parasitic and viral pathogens are considered, with major emphasis on clinical presentation and pathogenic mechanisms. Laboratory integration focuses on the common diagnostic modalities perti-

ment to the various infectious agents.

Physiology: An introduction to basic principles of physiology from the cellular level (membrane potentials, receptor physiology, transport mechanisms) to organ systems (cardiovascular, nervous, respiratory, gastrointestinal, urinary-renal and endocrine). Emphasizes regulatory control interactions needed for a holistic understanding of homeostasis and pathophysiology of humans. The course uses lectures, laboratories and clinical scenarios to teach the control mechanisms. Physiology is an intermediate step in the progression of knowledge acquisition necessary for subsequent courses. Knowledge of anatomy and biochemistry is a prerequisite for understanding physiology and the application to pathophysiology.

Physical Diagnosis: A lecture/laboratory course introducing the student to interviewing, history-taking and physical examination skills. Practical laboratory sessions include experiences in obtaining focused histories and performing physical examinations with emphasis on proper use of diagnostic equipment and techniques. The Standardized Performance Assessment Laboratory (SPAL) is utilized to provide opportunities for evaluating clinical skills in a realistic setting with standardized patients.

Basic Life Support: All students are required to achieve certification in Basic Life Support during the first academic year and to re-certify prior to clinical rotations.

Pathology: Develops a basis for the biological interpretation of disease processes by integrating the changes in structure and function associated with diseases and the relationship of symptoms to lesions.

Introduction to Medical Ethics: The course is designed to serve as an introduction to recognizing moral-ethical dilemmas in medicine and appropriately addressing them. Students explore basic ethical concepts, theories and principles, and the importance of morality, virtues and values. Developing moral reasoning skills is emphasized. Additionally, the interaction between the law and ethics and maintaining professional behavior and standards are introduced. Each student brings values and beliefs from his/her family, religion, culture, education and personal experience; during the course, students evaluate and augment their beliefs.

Geriatrics: This course will introduce the student to the core concepts in gerontology and geriatrics that will enable the future practitioner in any of the specialties to better address the unique health care needs of their older patient. Content areas include general principles of aging, preventive care of the older adult, core principles of geriatric medicine, the multi-disciplinary geriatric health care team and an overview of end-of-life issues.

Fundamentals of Patient Safety and Clinical Quality I: This online course is designed to provide medical students with an understanding of the circumstances related to patient safety within the health care setting. Topics covered include the basic vocabulary and concepts related to patient safety, the effect of systems on patient care, strategies for organizational change and team-building to achieve health care safety and quality, the impact of culture and teamwork on clinical outcomes, the root causes of clinical errors and how to learn from them, the basic vocabulary and concepts of clinical quality and risk, and models for assessing the improving quality.

Electronic Core Disaster Life Support: This online course is an introduction to disaster response developed by the National Disaster Life Support Foundation that consists of approximately four hours of interactive lecture. Students are introduced to the D-I-S-A-S-T-E-R paradigm, which then introduces the student to the many facets of disaster response and mitigation.

YEAR II COURSES

Fundamentals of Patient Safety and Clinical Quality II: This online course is designed to provide medical students with a practical application of patient safety concepts and principles within the health care setting. Topics covered include how to communicate with patients and families, the relationship between infection control and patient safety, how adverse events associated with surgical and invasive procedures occur, and how to utilize safe practices within the workplace.

Clinical Reasoning and Simulation: This is a clinically oriented course consisting of three components: simulation laboratory experiences, clinical reasoning lectures and Standardized Performance Assessment Laboratory (SPAL) experiences. The course

provides the student with an introduction to essential reasoning skills needed in clinical practice. The course stresses assimilation and integration of information obtained during the history and physical examination, use of common statistical methods, establishment of differential diagnoses, appropriate laboratory and ancillary tests, and clinical decision-making. Students are responsible for all information taught up to the time of their simulation cases and SPAL experiences. The course approaches clinical reasoning through lectures, group discussion, clinical case simulations and SPAL experiences.

Medical Pharmacology: This course introduces the basic principles of medical pharmacology and pharmacodynamics. The focus of the course is on the detailed mechanisms of drug actions and interactions as they relate to various clinical systems and pathologies. Several important topics in pharmacology are emphasized including autonomic pharmacology, neuropharmacology, cardiovascular pharmacology, pharmacogenomics, medical toxicology, herbal medicines and geriatric pharmacology. The course uses lecture, small group discussions, human patient simulations and clinical scenarios to teach a holistic understanding of the appropriate use of drugs for therapeutic intervention.

Evidence-Based Medicine: This course provides the student with an introduction to evidence-based methods to evaluate medical literature. This course approaches evidence-based medicine by means of lectures and literature review assignments.

Preventive Medicine/Nutrition: An introduction to the role of clinical preventive medicine in promoting health and preventing disease, disability and premature death from a population-based perspective. The course examines the role of screening, chemoprophylaxis and behavior modification in achieving these goals. Emphasis is given to the role of the successful physician in promoting healthy lifestyles in the communities they serve. A major component of this course is an introduction to the principles of nutrition, especially as it relates to the prevention of disease. Students will be encouraged to review their own nutritional habits and the influence these may have on a physician's role as patient counselor.

Cardiovascular System: This course is a combination of didactic lectures and case presentations that provides a thorough exposure

to both the basic science and clinical aspects of cardiovascular disease.

GI System: This course provides an in-depth study of gastrointestinal pathologies and their prevention and management so that the student receives an appropriate foundation for correlation with clinical clerkships. This is achieved through the integration of the basic and clinical sciences.

Infectious Disease/Public Health: Emphasizes the major infectious diseases in terms of etiology, epidemiology, treatment, control and prevention. These diseases are discussed by individuals in the fields of infectious diseases and public health. The combination of didactic and case-based instruction will provide exposure to the basic science and clinic aspects of infectious diseases.

Respiratory System: This course provides the student with an overview of the basic science and clinical aspects of the normal and pathophysiological functions of the respiratory system that will enable the student to recognize, understand, diagnose and treat the common clinical respiratory system conditions/diseases and to promote preventive interventions relevant to those common conditions

Hematology/Oncology: The Hematology and Oncology course is an introduction to the important principles underlying normal and pathological conditions associated with blood and cancer. Both pediatric and adult malignancies will be presented. The Hematology section will address normal and abnormal laboratory examinations, hemoglobin and metabolism, chronic and acute leukemias, clotting disorders and immunohematology. The Oncology section will address all the major cancers, their epidemiology and treatment. Treatment will include principles of radiation oncology, surgery and chemotherapy. In addition, students will be presented with information on dealing with terminal patients, including communication with adults and children and consideration of palliative care.

Endocrine System: Provides the student an overview of the basic science, the diagnosis and the management of common endocrine diseases. Clinical case presentations will illustrate common endocrine disorders.

Obstetrics/Gynecology: A comprehensive introduction to human reproduction with particular emphasis on gynecology, obstetrics

and women's health.

Renal System: Provides the student with a foundation of basic and clinical aspects of the renal system through lectures and case presentations. An overview of current diagnosis and management of renal diseases will be presented.

Neurology: Provides the student with a working knowledge of the neurological problems most commonly seen in general practice and a familiarity with the temporal profile of a variety of neurologic diseases commonly encountered by a primary care physician. Students will learn to recognize a patient with a neurologic disorder, localize a lesion within the nervous system, generate a defensible differential diagnosis, initiate an appropriate diagnostic work-up and a rational management therapy.

Psychiatry: This is a clinical case-based course designed to introduce the student to the field of psychiatry, with a focus on learning basic psychiatric nomenclature, important defense mechanisms, methods of assessment and diagnosis using the *Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition – Text Revision*, psychotherapeutic and pharmacological treatment modalities for common mental disorders, and psychiatric risk assessment. The student also is introduced to the stigmatization of persons seeking mental health services.

Rheumatology/Orthopedics: An introduction to the normal structure and function, as well as disorders of the musculoskeletal system. Fractures, dislocations and the other common disorders of bones and joints are presented by clinical orthopedic surgeons. In the rheumatology portion of the course, rheumatologists present the basic factors involved in connective tissue disorders. Current methods of diagnosis and treatment, as well as an understanding of basic immunological principles, are emphasized.

Ophthalmology: This course covers the fundamentals of the ocular examination for the primary care physician. The student should be able to diagnose and manage, or refer, the most commonly seen ocular disorders including acute visual loss, chronic visual loss, ocular and orbital injuries, amblyopia and strabismus, red eye, neuro-ophthalmologic disorders and ocular manifestations of systemic disease.

ENT: The objective of this course is to provide the student with a broad overview of the conditions and diseases effecting the ears, nose, sinuses, mouth, larynx and neck. This course will also introduce the student to the diagnostic evaluation and treatment of these conditions.

Dermatology/Allergy: Provides a primary care foundation for developing clinical understanding and acumen in dermatology and allergy. An overview of the contemporary diagnosis and management of dermatologic diseases and allergy treatment necessary for primary care is presented. The course provides a basic overview of the pathology and anatomy of dermatologic diseases and allergies and will equip the student to be able to identify common dermatologic and allergic reactions, conditions and treatments.

Osteopathic Manual Medicine II: Through lecture and laboratory experience, this course provides the student with a basic understanding of osteopathic diagnosis and manual treatment of the musculoskeletal-fascial system as related to the knee, ankle, foot, cranium, shoulder, elbow, wrist and hand. Clinical integration of disorders in the musculoskeletal system are taught from an osteopathic perspective. Students also receive supervised, individualized in-office opportunity to observe, diagnose and use manual treatment on patients according to the discretion of the physician in charge.

Medical Ethics II and Legal Topics in Clinical Medicine: This course is designed to assist students in understanding central issues of frequently encountered ethical-moral problems and the interrelationship between medical ethics and the law. Cases that have shaped medical ethics, as well as the more subtle ethical issues arising in practice, are discussed. Potential ethical-moral problems faced by students during clinical rotations also are explored. Emphasis is on the development of case-based ethical-moral problem-solving skills. At the completion of the course, students demonstrate their ability to apply ethical-moral decision-making in the context of a simulated patient encounter (SPAL).

Advanced Cardiac Life Support: A required course for all D.O. students. The course includes training in defibrillation/cardioversion, airway management/intubation, I.V. techniques, ECG interpretation and cardiovascular pharmacology. Successful completion of the ACLS course is a pre-requisite to beginning

clinical clerkships.

Neonatology Laboratory: Offers students a small group practical experience in three sessions. Time is spent on obtaining a history, performing a physical exam in the nursery at a hospital, charting in the nursery, how to care for the well newborn, common variants on physical exam and common genetic syndrome findings.

Ophthalmology Laboratory: A practical clinical experience covering visual acuity, funduscopy, eye patching, use of the slit lamp and tonometry.

Gynecology Laboratory: Is a brief hands-on experience relative to gynecologic pelvic examination. Plastic training models will be available; however, the primary learning experience will be the performance of a pelvic examination upon a live “patient.”

ENT Laboratory: The objective of this course is to provide the student with a broad overview of the conditions and diseases affecting the ears, nose, sinuses, mouth, larynx and neck. This course will also introduce the student to the diagnostic evaluation and treatment of these conditions.

Basic Surgical Skills: Under the direction of surgical residents and surgical nurses, second-year medical students learn basic aseptic technique, clinical and operative skills. Skills emphasis includes suturing and knot tying, foley catheter and nasogastric tube insertion, peripheral vascular access, venous cut-down and catheterization, cricothyroidotomy, chest tube insertion, arterial puncture and central line placement. Student application of new psychomotor skills is provided through hands-on procedure and computer simulation labs.

Introduction to Clinical Clerkships: The clinical clerkships are a time for accelerated learning and professional maturation in the skills of becoming a physician. This course serves as a bridge from pre-clinical study to clinical clerkships. It will present the clinical survival skills necessary for the art and practice of patient-centered health care.

NOTE: The College of Osteopathic Medicine offers a medical education program embracing the most current and complete information and teaching techniques. The College reserves the right to adapt the curriculum in response to faculty initiatives, developments in the state

of the teaching arts, research findings and recommendations from the Board of Trustees and the Committee on Colleges of the American Osteopathic Association.

YEARS III & IV– CLINICAL YEARS

Clinical years for the College of Osteopathic Medicine begin in the fall of the third academic year and continue until graduation. A minimum of 84 weeks of clinical rotations is required for graduation.

Planning for clinical rotations begin during year II. The location and sequence of rotations are determined by the Office for Clinical Affairs and the Associate Deans for Clinical Affairs. Clinical rotation guidelines are distributed prior to the beginning of the program. The University’s professional liability insurance is in effect and credit may be given only when students are in University-approved programs.

Required rotations are completed at University-affiliated teaching hospitals and clinics under the supervision of licensed physicians. Elective rotations may be with either an individual physician or a hospital. All rotations must be approved by the Associate Deans for Clinical Affairs. All students must pass Part I of COMLEX–National Board of Osteopathic Medical Examiners before starting clinical rotations.

Introduction to Health Systems & Policy:

This online course is designed to provide medical students with an overview of the U.S. health care system, to include content related to: reimbursement for health services, the organization of the health care delivery system, access to health services, public health issues, managed care and quality, the impact and importance of evidence-based medicine, the professionals that support physicians in practice, supply and demand issues related to physicians, specialty (physician) distribution, population-based medicine, community health assessment and the physician’s role and more. Formal and informal, financial and political relationships between and among system sectors will be considered. Regional patterns of care, trends, problems and potential solutions will be discussed/included.

Clinical Phase

General Surgery: The required general surgery rotation provides students with introductory experience in care and management of surgical patients. Students demonstrate

principles of clean and sterile technique, knowledge and usage of common surgical instruments and understanding of basic pre- and postoperative care. Students also gain practical experience performing and recording adequate and appropriate history and physical examinations, simple surgical procedures, nutritional assessments and fluid and electrolyte assessment.

Family Medicine: Continuity of care and the implication and responsibilities of primary care are emphasized. Students acquire an understanding of the interrelationship of health and family relationships, disease and social patterns from birth to death and clinical presentation of common diseases and disorders. Through examinations and by assisting in care, students demonstrate understanding of the natural courses of diseases and prognosis, recognize opportunities for prevention and early diagnosis and understand the protocol for routine screening and preventive practices. Learning progression is enhanced by the requirement of family practice rotations in both the third and fourth year.

General Pediatrics: Through this required rotation students gain understanding of the importance of health maintenance, prevention of disease, anticipatory guidance and the roles of other professionals, both medical and non-medical, in the health care of children. Students gain knowledge of the course of normal growth and development by participating in the care of newborns, children and adolescents. Students learn to perform common procedures and examinations, and measure for growth charts as well as demonstrate knowledge of current immunization practices, common behavioral disorders and common accidents and poisons encountered by children.

Obstetrics/Gynecology: The required obstetrics/gynecology rotation provides opportunity for students to develop familiarity with various obstetrical and gynecological procedures in the care of pregnant and non-pregnant women. Students observe and develop the skills needed to manage both normal and abnormal gynecological examinations, normal and high-risk pregnancy and normal and abnormal labor and management.

Internal Medicine: Upon completing the required internal medicine rotation, students should be able to elicit a medical history, perform a physical examination, obtain appropriate laboratory studies, assess the results,

develop a diagnosis, formulate a management plan and assist in implementing appropriate therapy for common problems in general internal medicine. Students should also develop fundamental psychomotor skills by performing routine procedures in a supervised clinical setting.

General Psychiatry/Behavioral Medicine:

The required rotation in general psychiatry is structured to develop students' skills in interviewing, diagnosis and clinical judgment as well as acquire factual knowledge in psychiatry, all of which will aid the student's ability to work with a variety of medical patients. Students may work in a variety of settings (e.g., inpatient, outpatient, emergency) and may assist in implementing appropriate therapy for patients identified as having psychiatric/behavioral medicine problems as well as patients with other medical problems in which there is an emotional element involved.

Global Health: Des Moines University's Global Health Program gives students, faculty, alumni and others an opportunity to gain real-world experience in international medicine. The program offers experiences and electives beyond our country's borders. It provides breadth of cultural, social, political and clinical experiences that are not available within the United States. Global Health experiences vary based on what students are interested in. Opportunities range from short medical service trips to extended length international clerkships. International experiences are supported through electives and other on-campus programs. Selective students have opportunities to do internships at the World Health Organization. Des Moines University also hosts several student clubs that focus on global health issues.

Comprehensive Examination Week: Students return to campus at the end of the third year to review skills and prepare for COMLEX Level 2. The examination week consists of a computer-based standardized board-like exam, standardized patient encounters, a simulated patient encounter, and osteopathic manual medicine practical patient encounter, an osteopathic manual medicine written exam, and a review of the Electronic Resident Application Service (ERAS) and the residency match process.

Clinical Years –

Location of Clerkships and Rotations

Clinical years consist of hospital based and

ambulatory clinical rotations and elective rotations in primary care and medical specialties. Students are expected to spend their third year clinical rotations at core clinical sites in the Midwest. Fourth year rotations are available throughout the country to facilitate the students exposure to residency opportunities. Thus, students should be prepared to travel to other sites for their clinical education. Students who are married, have dependents or are single parents should understand that the University does not promise or guarantee clerkships or rotations in Des Moines. The University will try to accommodate special needs, but students must be prepared to relocate.

ACADEMIC STANDARDS AND GUIDELINES

The College of Osteopathic Medicine believes that clear academic expectations and carefully monitored performance will result in the graduation of the highest quality osteopathic physicians. Therefore, the College of Osteopathic Medicine provides the means to carefully monitor the growth of each student and to promptly assist if any academic or personal difficulties arise. The primary tools for academic monitoring and advising are the Student Promotion and Evaluation Committee, the Offices of Academic, Student and Clinical Affairs and the faculty advisors.

Registration

Notification of availability and location of registration forms will be made via the student portal. (For more detailed information regarding University registration policies and procedures, refer to the Student Handbook.)

Religious Holidays

The administration and faculty are sensitive to the diverse religious affiliations of students. If an examination or other University activity is scheduled on the same day as a religious holiday, the student should contact the appropriate faculty member to request other arrangements to complete the scheduled activity.

Student Promotion and Evaluation Committee

This committee oversees the academic progress and personal development of each student during the four years of training required for graduation. The Committee comprises three clinical and four basic science faculty members. The Committee views both scholastic achievement and character development, including such considerations

as emotional stability, integrity, general conduct, reliability, judgment, professional promise and rapport with patients. When the Committee is satisfied that students have met all requirements, it recommends to the faculty that students be promoted or graduated.

The Committee also attempts to help the student with any non-academic difficulties, such as emotional problems, family adjustments or legal or financial problems. Recommendations for assisting students with personal problems are submitted to the Dean.

Grading System

Students receive a numerical or letter grade for each course, system or clinical rotation. A grade of 70 percent or higher is needed to pass while scores below 70 percent result in a failing grade. In courses using letter grades, (P) designates pass and (F) denotes fail. In core third-year clinical rotations, Honors Pass is available based on criteria established by the Clinical Chairs Committee. A student who does not complete the required work may receive an I for incomplete while the work is being completed. Incomplete is not a final grade.

Financial Aid Eligibility

Students must show satisfactory academic progress to remain eligible for financial aid. For specific eligibility requirements, refer to the section of this catalog titled "Tuition and Financial Aid."

Academic Regulations

The Student Promotion and Evaluation Committee may recommend appropriate action be taken if a student continues to do unsatisfactory work. The final decision rests with the Dean of the College. In accordance with the student evaluation mechanism, appropriate action may require that a student (1) repeat specific courses, an entire year or part of a year (Directed Studies); (2) be suspended pending further investigation; or (3) be dismissed from the College. Remediation of failed courses/systems by examination is offered during the summer vacation period. Any course, system or rotation may be repeated only once. Students must successfully complete COMLEX II CE and PE prior to graduation.

Directed Studies

The Directed Studies Program allows students experiencing academic difficulties in their first year the opportunity to reduce their course load. This action provides more time for study and academic counseling, and the opportunity to develop improved study skills.

The goal is to minimize additional course failures. Students on the Directed Studies Program will require more time (e.g., five years) to complete requirements for the D.O. degree. Students seeking more information about the program should contact the Office of the Associate Dean for Academic Affairs.

Withdrawal

Application for voluntary withdrawal from the College must be submitted in writing to the Dean. An exit interview with the Dean is required before withdrawal or transfer.

The Dean, Associate Dean for Academic Affairs or Associate Dean for Clinical Affairs may place a student on leave of absence or grant a request for leave of absence because of health problems, tragedy in the immediate family, unexpected financial setback or reasons agreed upon by one of the deans in consultation with the Student Promotion and Evaluation Committee.

Graduation

The University awards the professional degree of Doctor of Osteopathic Medicine (D.O.) upon recommendation of the faculty. The Student Promotion and Evaluation Committee reports annually to the faculty the names of students who have met requirements for the doctoral degree. To graduate, a student must:

1. Have attained the age of 21 years.
2. Have successfully completed all prescribed courses, systems, rotations and examinations.
3. Be in attendance at the College of Osteopathic Medicine for at least two years.
4. Be of good moral character and emotionally stable.
5. Show professional promise in the judgment of the faculty and receive the faculty's recommendation for graduation.
6. Satisfactorily discharge all financial obligations to the University.
7. Complete all graduation requirements, including the graduation clearance process.
8. Pass Level 1 and Level 2 (Cognitive Evaluation and Performance Evaluation) of the Comprehensive Osteopathic Medical Licensing Exam (COMLEX) of the National Board of Osteopathic Medical Examiners.
9. Attend graduation ceremonies at which time the degree is conferred. Students graduating at midterm may be granted an exception to this requirement.

Licensure

Osteopathic physicians are required to be licensed by the states in which they practice.

Each state has its own individual requirements for granting licensure. Generally, a license can be obtained by successful completion of all three parts of the COMLEX administered by the National Board of Osteopathic Medical Examiners, or by reciprocity from another state.

The Comprehensive Osteopathic Medical Licensing Exam (COMLEX) given by the National Board of Osteopathic Medical Examiners is divided into three parts. Parts 1 and 2 are taken during the medical school years. Part 3 consists of a written examination that is usually taken during the first postgraduate year. The College requires that students pass Part 1 of the COMLEX before entering clinical rotations and pass Part 2 CE and PE before graduation.

Internships and Residencies

Postdoctoral training in an American Osteopathic Association (AOA) or Accreditation Council for Graduate Medical Education (ACGME) approved program is part of the continuum of osteopathic medical education. Sixty percent of our students enter primary care residency programs (Family Medicine, Internal Medicine & Pediatrics) while the remainder enter specialties such as Ob/Gyn, Anesthesiology, Emergency Medicine & Surgical specialties.

Scholarships

A limited number of renewable scholarship awards are made to highly qualified incoming D.O. students. These scholarships range from one-quarter tuition to full tuition awards. The COM Scholarship Committee evaluates the admission applications of accepted students for recipients of these awards. No formal scholarship application is required for these renewable awards.

In addition, each spring enrolled students can apply for one-year scholarship awards in a variety of categories, including academic excellence, excellence in service, clinical excellence (during clerkships), research and scholarly activity.

For a complete listing of scholarships for which COM students may apply, refer to the section of this catalog titled "Tuition and Financial Aid."

Master of Science in Anatomy Program

The Master of Science (M.S.A.) in Anatomy program provides advanced training in anatomy and is designed to prepare students for a professional career in academic teaching. Educators and scientists who wish to further enhance their careers as teachers of the anatomical disciplines will also benefit from this program.

The program leading to the M.S.A. degree is designed to be completed in two years, but can take up to five years to be completed on a part-time basis. The curriculum includes first-year medical school classes, courses specifically designed for the anatomy master's degree program and an extensive requirement to teach anatomy by assisting the anatomy faculty in this noble craft.

Students currently enrolled in the Doctor of Osteopathic Medicine (D.O.) program or Doctor of Podiatric Medicine (D.P.M.) program can also apply to the Anatomy program. The curriculum for dual degree students (D.O./M.S.A. or D.P.M./M.S.A.) is designed to be completed during the first two years of their medical program. The emphasis for dual degree students is on expanding each student's anatomic knowledge to better prepare him or her to enter medical specialties underpinned by anatomical knowledge.

Mission

To equip students for professional careers in teaching anatomy and expand the fund of anatomic knowledge to dual degree students who plan to enter medical specialties underpinned by anatomical knowledge.

Vision Statement

The Anatomy Program aims to develop educators and clinicians capable of advancing the discipline of anatomy through teaching and clinical practice.

ADMISSION POLICIES

The admission policies of the College of Osteopathic Medicine's Anatomy Graduate Program ensure selection of students with appropriate preparation to meet the rigors of the challenging curriculum in graduate education. These policies define acceptable undergraduate education and designate admission procedures. All admission requirements must be completed prior to matriculation. Prospective students should carefully note specified deadlines.

The application process culminates with a personal interview at Des Moines University. Because of limited openings, the Anatomy Graduate Admission Committee invites only those candidates considered to have the greatest professional promise. The Committee bases decisions on academic achievement, activities, personality, character, motivation and promise shown by candidates. Advanced standing based on prior course work is not given.

Misrepresentation

Misrepresentation in, or omission from, admission credentials, particularly information concerning previous felony or misdemeanor convictions, will constitute improper behavior under the Student Evaluation Mechanism provisions of the College of Osteopathic Medicine Anatomy Student Handbook.

Multiple Applications

Concerning students applying to the University for the first time: First-time entering students may apply to only one clinical program at a time. Multiple college or program applications will not be accepted or processed. *Dual degree (D.O./M.H.A., D.O./M.P.H., D.O./M.S.) is the only exception.

Concerning currently enrolled students: Enrolled students in the final year of their respective programs who anticipate completion of a DMU degree may apply for admission to another University program. If accepted, students are expected to complete the full curriculum in which they are currently enrolled. Students enrolled in another DMU program may not transfer into the D.O. program. In order to be considered for admission to the D.O. program, students must first withdraw from the other DMU program.

Minimal Technical Standards for Admission and Matriculation

The College of Osteopathic Medicine's Anatomy Graduate Program is pledged to the

admission and matriculation of all qualified students and acknowledges awareness of laws that prohibit discrimination against anyone on the basis of race, color, religion, gender, national origin, ancestry, sexual orientation, age, disability, marital status, citizenship or any other characteristic protected by law. Regarding disabled individuals, the College will not discriminate against such individuals who are otherwise qualified, but will expect applicants and students to meet certain minimal technical standards as set forth herein. The standards reflect reasonable expectations of graduate students in performing common functions.

Technical Standards

The holder of a M.S. degree must have the knowledge and skills to function in a broad variety of situations. In order to carry out the activities described below, candidates for the M.S. degree must be able to consistently, quickly and accurately integrate all information received, and must have the ability to learn, integrate, analyze and synthesize data. Technological accommodations can be made for handicaps in some of these areas, but a candidate must be able to perform in a reasonably independent manner.

- 1. Observation:** Candidates and students must have sufficient vision to be able to observe demonstrations, experiments and laboratory exercises in the basic sciences.
- 2. Communication:** Candidates and students should be able to speak, hear and observe in classroom and laboratory settings. They must also be able to communicate effectively and efficiently in oral and written form with classmates and faculty.
- 3. Motor:** Candidates and students should have sufficient motor function to execute movements reasonably required in a classroom or laboratory setting.
- 4. Intellectual, Conceptual, Integrative and Quantitative Abilities:** Candidates and students must be able to concentrate, analyze and interpret data and make decisions within areas in which there is a reasonable amount of visual and auditory distraction. They must also perform these functions in a timely manner.
- 5. Behavioral and Social Attributes:** Candidates and students must possess the emotional health required for full utilization of their intellectual abilities, the exercise of good judgment, the prompt completion of all responsibilities. Candidates and students must be able to tolerate physically taxing workloads, adapt to changing environments, display flexibility

and learn to function in the face of uncertainties inherent in graduate research.

The College of Osteopathic Medicine attempts to develop creative ways of offering the graduate school curriculum to competitive, qualified disabled individuals. In doing so, however, the College must maintain the integrity of its curriculum and preserve those elements deemed essential for graduate education.

ADMISSION REQUIREMENTS

To be considered for admission, you must have a B.A. or B.S. or complete the requirements for a degree before matriculation. The degree should be in the biological or physical sciences; however, applicants with non-science degrees will be considered if they have a strong science background.

Prerequisites

The courses below are required for admission; you may apply while course work is in progress.

General Biology 8 hours, with lab
General Chemistry 8 hours, with lab
Organic Chemistry 4 hours, with lab
Physics 8 hours, with lab
(or 4 hours physics with lab +3 hours of statistics)
English: Comp/Literature/Speech 6 hours
Biochemistry 3 hours

Entrance Exams

Applicants must supply results of either the Medical College Admission Test (MCAT), Graduate Record Examination (GRE), or Dental Admissions Test (DAT) with their application.

Academic Requirements

A science GPA and cumulative GPA of 3.0 or higher are recommended to be considered for admission to the College of Osteopathic Medicine Anatomy Graduate Program.

TOEFL

In addition to admission requirements, applicants who are not native speakers of English must satisfy an adequate command of the English language. Test of English as a Foreign Language (TOEFL) scores or other evidence of English proficiency are required. A minimum TOEFL score of 550 points on the written exam, 213 on the computerized exam or 69 on the internet-based exam is required. Individual graduate programs may require scores higher than the minimums stated. For

more information about the TOEFL, visit www.ets.org/toefl. The TOEFL requirement is waived for applicants who received a degree from an institution where instruction was conducted in English.

Letters of Recommendation

All applicants will supply three letters of recommendation from science professors who can evaluate the applicant's abilities and probability of success in the program.

Dual Degree Students

Dual degree students can not apply to this program prior to January 2 of their first year.

Permanent Residents

Applicants who are legal permanent residents of the U.S. are required to provide a copy of their permanent resident card ("green card") prior to admission. NOTE: Permanent residency status "pending" is not eligible for admission.

Non-U.S. Citizens

Applicants who are not U.S. citizens or permanent residents should review the information for international students on page 10.

Other

Accepted students will be required to complete a criminal background check prior to matriculation.

APPLICATION PROCESS

An application can be found at www.dmu.edu.

Prior to receiving an invitation to interview, an application must be completed and contain all of the following:

1. A completed online Admission Application.
2. A \$50 non-refundable application fee.
3. Examination scores (either DAT, MCAT or GRE).
4. An official transcript from each college or university attended.
5. Three letters written by science professors who can evaluate the applicant's abilities and probability of success in the program. Letters from social science professors, although welcome, (psychology, sociology, anthropology, etc.) will not count toward completing your file.
6. All letters of recommendation should be on the writer's letterhead and sent directly from the writer to:

M.S.A. Admission
Des Moines University
3200 Grand Avenue
Des Moines, Iowa 50312

All completed applications are reviewed. A limited number of applicants are invited to the College for a personal interview. Offers of acceptance are based on a combination of academic records, the interview and personal recommendations.

Procedures for Accepted Students

Students accepted for admission to the College must:

1. Complete any required courses and/or a bachelor's degree prior to matriculation.
2. Have a physical examination and complete an immunization report before registration. Students admitted shortly before classes begin will have four weeks to complete this requirement. A complete listing of required immunizations is sent to students before orientation.
3. Complete a criminal background check through Verified Credentials. Results must be released to DMU prior to matriculation. The cost of this process will be paid by the applicant.
4. Have medical insurance coverage that provides comprehensive major medical benefits. Students must present proof of coverage at registration. Information is sent to students before orientation.
5. Register for classes on the designated date.

Application fees are non-refundable. Tuition is refundable in accordance with the schedules published in this catalog. Refer to the section titled "Tuition and Financial Aid." No other refund schedule will apply. The University's Board of Trustees reserves the right to change tuition and fees at any time.

All correspondence, applications and inquiries should be directed to:

M.S.A. Admission
Des Moines University
3200 Grand Ave.
Des Moines, Iowa 50312-4198.
Telephone 1-800-240-2767, ext. 1499,
or (515) 271-1499
E-mail: MSAdmit@dmu.edu.

Transfer of Credit

A student may request transfer credit for previous graduate work completed at other regionally accredited (or equivalent) educational institutions. The request should be submitted in writing to the director of the Anatomy Program who will forward it to the

anatomy faculty. Approved graduate work will be entered on the student's permanent record by the registrar's office. No more than 10 hours of approved graduate work will be applied toward the 40.5 hours required for the Master of Science degree.

Dual degree students may transfer in all required and elective classes for the program as long as they were taken at DMU; however, they must have an average of 85% in anatomy course work (i.e., gross anatomy, cell and tissue biology, neuroanatomy and human development) and an average of 80% in all other courses that are transferred.

CURRICULUM

The Master of Science in Anatomy is a 40.5 credit hour program of study. The student must successfully complete 34.5 credit hours of required course work and six hours of elective course work. The course work for the degree is:

Required Course Work 34.5 credit hours

Gross Anatomy.....7 credit hours
Physiology7 credit hours
Biochemistry and

Molecular Genetics5 credit hours
Cell and Tissue Biology 3.5 credit hours
Neuroanatomy2 credit hours
Human Development.....2 credit hours
Teaching Anatomy4 credit hours
Seminars in Anatomy2 credit hours
Advanced Dissections
in Anatomy2 credit hours

Electives 6 credit hours

Microbiology/Immunology.....6 credit hours
General Pathology3 credit hours
Basic Surgical Skills 1 credit hour
Research2-6 credit hours
Cell Biology.....3 credit hours
Cranial Nerves1 credit hour
Introduction to
Clinical Imaging2 credit hours

Comprehensive Examination in Anatomy

Successful completion of the comprehensive examination in anatomy is also required of M.S. anatomy students. The comprehensive examination consists of a written examination covering the four anatomy disciplines: gross anatomy, cell and tissue biology, neuroanatomy and human development.

Tentative Distribution of Credit Hours

Year 1 Fall/Spring/Summer Semesters

Gross Anatomy.....7 credit hours
Cell and Tissue Biology 3.5 credit hours
Biochemistry &

Molecular Genetics5 credit hours
Introduction to Physiology7 credit hours
Neuroanatomy2 credit hours
Electives..... 0-6 hours

Year 2 Fall/Spring/Summer Semesters

Teaching in Anatomy.....4 credit hours
Seminar in Anatomy (fall)..... 1 credit hour
Electives.....0-5 credit hours
Human Development.....2 credit hours
Seminar in Anatomy (spring) 1 credit hour
Advanced Dissections

in Anatomy2 credit hours
Electives.....0-6 credit hours

Comprehensive Examination

Total Credits to Graduate 40.5 credit hours

SUMMARY OF COURSES

Gross Anatomy: The structure of the human body is presented in lecture, laboratory, and computer learning models. Cadaveric dissection of each region of the body demonstrates normal form, common variations and pathological conditions. Normal function and clinical significance are stressed and reinforced through presentations by medical personnel. Additional lectures integrate the early development of body form and cellular organization with regional anatomy. (7 credit hours)

Cell and Tissue Biology: A comprehensive study of human cell biology, basic tissues and organ systems (e.g., cardiovascular, gastrointestinal, integumentary and lymphoid). Wherever possible, the study of histology is translated to clinical relevance. The course consists of regularly scheduled lectures and laboratory periods. In laboratories, students study the light and electron microscopic structure of cells, tissues and organs through atlases, prepared slides, virtual microscope and computer-assisted learning software. (3.5 credit hours)

Neuroanatomy: The structural and functional organization of the central nervous system is presented through lectures and laboratory/computer demonstrations on parts of the brain and spinal cord. The course covers the role of the brain and spinal cord in sensory

perception and movement of the human body, including organs and behavioral responses. Wherever possible, case studies and appropriate syndromes are also presented. (2 credit hours)

Biochemistry and Molecular Genetics: An introductory molecular description of biological structure and function. Normal metabolism and gene expression are given the major emphasis. Several common genetic diseases and metabolic disorders serve to contrast normal and perturbed human biochemistry, as well as demonstrate the clinical implications of human biochemistry. (5 credit hours)

Microbiology/Immunology: An introduction to the various subdisciplines of microbiology, with emphasis on facts and principles pertinent to the broad requirements for understanding infectious diseases. Bacterial, mycotic, parasitic and viral pathogens are considered, with major emphasis on host-pathogen interactions and pathogenic mechanisms. Basic principles and clinical relevance of immune mechanisms are presented. Laboratory integration focuses on the common diagnostic modalities pertinent to the various infectious agents. (6 credit hours) Prerequisite: Biochemistry

General Pathology: Develops a basis for the biological interpretation of disease processes by integrating the changes in structure and function associated with diseases and the relationship of symptoms to lesions. (3 credit hours) Prerequisites: Biochemistry and Cell and Tissue Biology

Physiology: An introduction to basic principles of physiology from the cellular level (membrane potentials, receptor physiology, transport mechanisms) to organ systems (cardiovascular, nervous, respiratory, gastrointestinal, urinary-renal and endocrine). Emphasizes regulatory control interactions needed for a holistic understanding of homeostasis and pathophysiology of humans. The course uses lectures, laboratories and clinical scenarios to teach the control mechanisms. Physiology is an intermediate step in the progression of knowledge acquisition necessary for subsequent courses. (7 credit hours) Prerequisite: Biochemistry

Cell Biology: This is an advanced course in cell biology designed to familiarize the students with modern concepts of cell and molecular biology. Topics to be covered will include transcription, translation, intracel-

lular trafficking, cell-cell signaling, membrane transport, and structure and function of DNA. (3 credit hours) Prerequisite: Biochemistry

Seminar in Anatomy: Review, discussion, and presentation of topics related to anatomy research and teaching. (1 credit hour) Prerequisite: Gross Anatomy, Neuroanatomy, Cell and Tissue Biology and Human Development

Human Development: An introduction to the basic principles and concepts of human development from zygote to birth. Wherever possible, developmental processes will be translated to clinical relevance. (2 credit hours)

Teaching in Anatomy: This course will allow students to participate in laboratory and/or lecture instruction in one or more of the courses offered by the anatomy department. (4 credit hours) Prerequisites: Gross Anatomy, Neuroanatomy, Cell and Tissue Biology and Human Development

Advanced Dissections in Anatomy: The course will allow students to dissect areas of the human cadaver to further their knowledge of anatomical structure. Students, under supervision by the faculty, will prepare dissections of specific areas of the human cadaver and prepare a computer tutorial with self assessment. These tutorials will be placed on the student intranet and departmental webpage. (2 credit hours) Prerequisite: Gross Anatomy

Research: Research under the supervision of a graduate faculty member. (2-6 credit hours) Instructor consent required.

Basic Surgical Skills: Under the direction of surgical residents and surgical nurses, students learn basic aseptic techniques and to apply anatomy vis-à-vis clinical and operative skills. Skills emphasis includes suturing and knot tying, foley catheter and nasogastric tube insertion, peripheral venous access, venous cut-down and catheterization, cricothyroidotomy, chest tube insertion, pericardiocentesis, arterial puncture, and central line placement. Student application of new psychomotor skills is provided through hands-on procedure and simulation labs. (1 credit hour) Prerequisite: Gross Anatomy

Cranial Nerves: This course is designed to provide an understanding, through clinical case discussions, of the structure and function of the cranial nerves and the main neurological deficits resulting from cranial nerve

lesions. It is assumed that the student taking this course will have a reasonable working knowledge of the structure and function of the cranial nerves. (1 credit hour) Prerequisite: Neuroanatomy

Introduction to Clinical Imaging: A general introduction to and review of the principles and clinical examples of modern medical imaging with emphasis on radiological anatomy. The imaging modalities of plain film, X-ray computed tomography (CT) and magnetic resonance imaging (MRI) are emphasized as they relate to normal and abnormal anatomy. (2 credit hours) Prerequisites: Gross Anatomy and Neuroanatomy

ACADEMIC STANDARDS AND GUIDELINES

The College of Osteopathic Medicine's Anatomy Graduate Program believes that clear academic expectations and carefully monitored performance will result in the graduation of the highest quality graduate students. Therefore, the College provides the means to carefully monitor the growth of each student and to promptly assist if any academic or personal difficulties arise. The primary tools for academic monitoring and advising are the anatomy faculty, the Student Promotion and Evaluation Committee, the offices of academic, student and clinical affairs and faculty advisers.

Registration

Notification of availability and location of registration forms will be made via the student portal. (For more detailed information regarding University registration policies and procedures, refer to the Student Handbook.)

Religious Holidays

The administration and faculty are sensitive to the diverse religious affiliations of students. If an examination or other University activity is scheduled on the same day as a religious holiday, the student should contact the appropriate faculty member ahead of time to request other arrangements to complete the scheduled activity.

Evaluation of Student Academic Progress

Anatomy Graduate Faculty – The anatomy graduate faculty oversee the academic progress and personal development of each student during the years of training required

for graduation.

Biomedical Sciences Coordinating Committee – This committee will review graduation recommendations from the Anatomy faculty and transmit them to the Student Promotion and Evaluation Committee.

Student Promotion and Evaluation Committee – This committee makes the final recommendations for graduation and enforces the handbook. The Committee comprises three clinical and four basic science faculty members.

Grading System

Students receive a numerical or letter grade for each course. A grade of 70 percent or higher is needed to pass while scores below 70 percent result in a failing grade. In courses using letter grades, (P) designates pass and (F) denotes fail. A student who does not complete the required work may receive an "I" for incomplete while the work is being completed. Incomplete is not a final grade.

Students must maintain a cumulative percentage average of 85% or greater in the following anatomy courses: gross anatomy, cell and tissue biology, neuroanatomy and human development. Students must also maintain a cumulative percentage average of 80% or greater within the entire Master of Science curriculum and successfully complete the Comprehensive Examination in Anatomy.

Financial Aid Eligibility

Students must show satisfactory academic progress to remain eligible for financial aid. For specific eligibility requirements, refer to the section of this catalog titled "Tuition and Financial Aid."

Academic Regulations

The Student Promotion and Evaluation Committee may recommend appropriate action be taken if a student continues to do unsatisfactory work. The final decision rests with the dean of the College.

Remediation of failed courses/systems by examination is offered during the summer period. Any course may be repeated only once.

Withdrawal

Application for voluntary withdrawal from the Program must be submitted in writing to the director. An exit interview with the director is requested before withdrawal or transfer.

The director may place a student on leave of absence or grant a request for leave of absence because of health problems, tragedy in the immediate family, unexpected financial setback or reasons agreed upon by one of

the deans in consultation with the Student Promotion and Evaluation Committee.

Graduation

The University awards the degree of Master of Science in Anatomy (M.S.) upon recommendation of the faculty. The Student Promotion and Evaluation Committee reports annually to the faculty the names of students that have met requirements for the master's degree.

To graduate, a student must:

1. Have successfully completed all prescribed courses.
2. Have successfully completed the Comprehensive Examination.
3. Be in attendance at the College of Osteopathic Medicine for the last 30 credits.
4. Be of good moral character and emotionally stable.
5. Show professional promise in the judgment of the faculty and receive the faculty's recommendation for graduation.
6. Satisfactorily discharge all financial obligations to the University.
7. Complete all graduation requirements, including the graduation clearance process.

Master of Science in Biomedical Sciences Program

The Master of Science in Biomedical Sciences (M.B.S.) program offers training for students interested in research/teaching careers at academic, government or private institutions. We will provide individuals aspiring for a health science career an opportunity to become prepared for professional studies in the areas of medicine, education and research.

The program leading to the M.B.S. degree is designed to be completed in two years, but can take up to five years to be completed on a part-time basis. The curriculum includes first-year medical school classes, courses specifically designed for the biomedical science program and an intensive year of bench research.

Students currently enrolled in the Doctor of Osteopathic Medicine (D.O.) program or Doctor of Podiatric Medicine (D.P.M.) program can also apply to the Biomedical Sciences program. Curriculum for dual degree students (D.O./M.B.S. or D.P.M./M.B.S.) is designed to be completed within five years. The emphasis for dual degree students is on training clinician researchers to teach research methods and conduct methodologically rigorous and scientifically sound studies.

Mission

To equip students for professional careers as biomedical scientists prepared to enter medical research, academic medicine, or industrial and government laboratories that address problems of human health.

Vision Statement

The Biomedical Sciences Program strives to develop scientist and clinical researchers capable of advancing the treatment, cure and prevention of disease through education, research and clinical practice.

ADMISSION POLICIES

The admission policies of the College of Osteopathic Medicine's Biomedical Sciences Program ensure selection of students with appropriate preparation to meet the rigors of the challenging curriculum in graduate education. These policies define acceptable undergraduate education and designate admission procedures. All admission requirements must be completed prior to matriculation. Prospective students should carefully note specified deadlines.

The application process culminates with a personal interview at Des Moines University. Because of limited openings, the Graduate Admission Committee invites only those candidates considered to have the greatest professional promise. The Committee bases decisions on academic achievement, activities, personality, character, motivation and promise shown by candidates. Advanced standing based on prior coursework is not given.

Misrepresentation

Misrepresentation in, or omission from, admission credentials, particularly information concerning previous felony or misdemeanor convictions, will constitute improper behavior under the Student Evaluation Mechanism provisions of the College of Osteopathic Medicine Biomedical Sciences Student Handbook.

Multiple Applications

Concerning students applying to the University for the first time: First-time entering students may apply to only one clinical program at a time. Multiple college or program applications will not be accepted or processed. *Dual degree (D.O./M.H.A., D.O./M.P.H., D.O./M.S.) is the only exception.

Concerning currently enrolled students: Enrolled students in the final year of their respective programs who anticipate completion of a DMU degree may apply for admission to another University program. If accepted, students are expected to complete the full curriculum in which they are currently enrolled. Students enrolled in another DMU program may not transfer into the College of Osteopathic Medicine. In order to be considered for admission to the College of Osteopathic Medicine, students must first withdraw from the other DMU program.

Minimal Technical Standards for Admission and Matriculation

The College of Osteopathic Medicine's Biomedical Sciences Program is pledged to the admission and matriculation of all

qualified students and acknowledges awareness of laws that prohibit discrimination against anyone on the basis of race, color, religion, gender, national origin, ancestry, sexual orientation, age, disability, marital status, citizenship or any other characteristic protected by law. Regarding disabled individuals, the College will not discriminate against such individuals who are otherwise qualified, but will expect applicants and students to meet certain minimal technical standards as set forth herein. The standards reflect reasonable expectations of graduate students in performing common functions.

Technical Standards

The holder of a M.S. degree must have the knowledge and skills to function in a broad variety of situations. In order to carry out the activities described below, candidates for the M.S. degree must be able to consistently, quickly and accurately integrate all information received, and must have the ability to learn, integrate, analyze and synthesize data. Technological accommodations can be made for handicaps in some of these areas, but a candidate must be able to perform in a reasonably independent manner.

- 1. Observation:** Candidates and students must have sufficient vision to be able to observe demonstrations, experiments and laboratory exercises in the basic sciences.
- 2. Communication:** Candidates and students should be able to speak, hear and observe in classroom and laboratory settings. They must also be able to communicate effectively and efficiently in oral and written form with classmates and faculty.
- 3. Motor:** Candidates and students should have sufficient motor function to execute movements reasonably required in a classroom or laboratory setting.
- 4. Intellectual, Conceptual, Integrative and Quantitative Abilities:** Candidates and students must be able to concentrate, analyze and interpret data and make decisions within areas in which there is a reasonable amount of visual and auditory distraction. They must also perform these functions in a timely manner.
- 5. Behavioral and Social Attributes:** Candidates and students must possess the emotional health required for full utilization of their intellectual abilities, the exercise of good judgment, the prompt completion of all responsibilities. Candidates and students must be able to tolerate physically taxing workloads, adapt to changing environments, display flexibility

and learn to function in the face of uncertainties inherent in graduate research.

The College of Osteopathic Medicine will attempt to develop creative ways of offering the graduate school curriculum to competitive, qualified disabled individuals. In doing so, however, the College must maintain the integrity of its curriculum and preserve those elements deemed essential for graduate education.

ADMISSION REQUIREMENTS

To be considered for admission, you must have a B.A. or B.S. or complete the requirements for a degree before matriculation. The degree should be in the biological or physical sciences; however, applicants with non-science degrees will be considered if they have a strong science background.

Prerequisites

The courses below are required for admission; you may apply while coursework is in progress.

General Biology	8 hours, with lab
General Chemistry.....	8 hours, with lab
Organic Chemistry.....	4 hours, with lab
Physics.....	8 hours, with lab (or 4 hours physics with lab +3 hours of Statistics)
English: Comp/Literature/Speech	6 hours
Biochemistry.....	3 hours

Entrance Exams

Applicants must supply results of the Medical College Admission Test (MCAT), Graduate Record Examination (GRE), or Dental Admissions Test (DAT) with their application.

Academic Requirements

A science GPA and cumulative GPA of 3.0 or higher are recommended to be considered for admission to the College of Osteopathic Medicine Biomedical Sciences Program.

TOEFL

In addition to admission requirements, applicants who are not native speakers of English must satisfy an adequate command of the English language. Test of English as a Foreign Language (TOEFL) scores or other evidence of English proficiency are required. A minimum TOEFL score of 550 points on the written exam, 213 on the computerized exam or 69 on the internet-based exam is required. Individual graduate programs may require scores higher than the minimums stated. For

more information about the TOEFL, visit www.ets.org/toefl. The TOEFL requirement is waived for applicants who received a degree from an institution where instruction was conducted in English.

Letters of Recommendation

All applicants will supply three letters of recommendation from science professors who can evaluate the applicant's abilities and probability of success in the program.

Dual Degree Students

Dual degree students can not apply to this program prior to January 2 of their first year.

Permanent Residents

Applicants who are legal permanent residents of the U.S. are required to provide a copy of their permanent resident card ("green card") prior to admission. NOTE: Permanent residency status "pending" is not eligible for admission.

Non-U.S. Citizens

Applicants who are not U.S. citizens or permanent residents should review the information for international students on page 10.

Other

Accepted students will be required to complete a criminal background check prior to matriculation.

APPLICATION PROCESS

An application can be found online at www.dmu.edu.

Prior to receiving an invitation to interview, an application must be completed and contain all of the following:

- A completed online Admission Application.
- A \$50 non-refundable application fee.
- Examination scores (either DAT, MCAT or GRE).
- An official transcript from each college or university attended.
- Three letters written by science professors who can evaluate the applicant's abilities and probability of success in the program. Letters from social science professors, although welcome, (psychology, sociology, anthropology, etc.) will not count toward completing your file.
- All letters of recommendation should be on the writer's letterhead and sent directly from the writer to:

M.B.S. Admission

Des Moines University
3200 Grand Avenue
Des Moines, Iowa 50312

All completed applications are reviewed. A limited number of applicants are invited to the College for a personal interview. Offers of acceptance are based on a combination of academic records, the interview and personal recommendations.

Procedures for Accepted Students

Students accepted for admission to the College must:

- Complete any required courses and/or a bachelor's degree prior to matriculation.
- Have a physical examination and complete an immunization report before registration. Students admitted shortly before classes begin will have four weeks to complete this requirement. A complete listing of required immunizations is sent to students before orientation.
- Complete a criminal background check through Verified Credentials. Results must be released to DMU prior to matriculation. The cost of this process will be paid by the applicant.
- Have medical insurance coverage that provides comprehensive major medical benefits. Students must present proof of coverage at registration. Information is sent to students before orientation.
- Register for classes on the designated date. Application fees are non-refundable. Tuition is refundable in accordance with the schedules published in this catalog. Refer to the section titled "Tuition and Financial Aid." No other refund schedule will apply. The University's Board of Trustees reserves the right to change tuition and fees at any time.

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Des Moines, Iowa 50312-4198.
Telephone 1-800-240-2767, ext. 1499,
or (515) 271-1499
E-mail: MBSAdmit@dmu.edu.

Transfer of Credit

A student may request transfer credit for previous graduate work completed at other regionally accredited (or equivalent) educational institutions. The request should be submitted in writing to the Director of Biomedical Sciences who will forward it to the Biomedical Sciences Coordinating Committee. Approved graduate work will be entered on the student's permanent record by the

Registrar's Office. No more than 10 hours of approved graduate work will be applied toward the 40 hours required for the Master of Science degree.

Dual degree students may transfer in all required and elective classes for the program as long as they were taken at DMU; however, they must have an average of 80% or greater in every class that is transferred.

CURRICULUM

Required Course Work

Biochemistry and
Molecular Genetics5 credit hours
Microbiology/Immunology
or Physiology 6-7 credit hours
Responsible Conduct in
Biomedical Research..... 1 credit hour
Biostatistics3 credit hours
Cell Biology.....3 credit hours
Introduction to Research 1 credit hours
Special Topics3 credit hours
Presentation of
Scientific Information 1 credit hour
Scientific Communication 1 credit hour
Research 15 credit hours
Total Required
Coursework39-40 credit hours

Electives

Pharmacology5 credit hours
Special Topics
in Microbiology*3 credit hours
Special Topics
in Pharmacology*3 credit hours
Special Topics
in Physiology*3 credit hours
Special Topics
in Biochemistry*3 credit hours
Total Credits to Graduate 40 credit hours

* Represents courses that apply toward
Special Topics Requirement

Tentative Distribution of Credit Hours

YEAR 1 - Fall/Spring/Summer Semesters

Introduction to Research 1 credit hour
Biochemistry and
Molecular Genetics5 credit hours
Microbiology/Immunology
or Physiology 6-7 credit hours
Cell Biology.....3 credit hours
Biostatistics3 credit hours
Responsible Conduct in
Biomedical Research 1 credit hour
Special Topics3 credit hours

Research0-3 credit hours
Electives 1 credit hours

YEAR 2 - Fall/Spring/Summer Semester

Presentation of
Scientific Information 1 credit hour
Research 12-15 credit hours
Scientific Communication 1 credit hour
Thesis Defense
Total Credits to Graduate 40 credit hours

SUMMARY OF COURSES

Biochemistry and Molecular Genetics: An introductory molecular description of biological structure and function. Normal metabolism and gene expression are given the major emphasis. Several common genetic diseases and metabolic disorders serve to contrast normal and perturbed human biochemistry, as well as demonstrate the clinical implications of human biochemistry. (5 credit hours)

Microbiology/Immunology: An introduction to the various subdisciplines of microbiology, with emphasis on facts and principles pertinent to the broad requirements for understanding infectious diseases. Bacterial, mycotic, parasitic and viral pathogens are considered, with major emphasis on host-pathogen interactions and pathogenic mechanisms. Basic principles and clinical relevance of immune mechanisms are presented. Laboratory integration focuses on the common diagnostic modalities pertinent to the various infectious agents. (6 credit hours) Prerequisite: Biochemistry

Physiology: An introduction to basic principles of physiology from the cellular level (membrane potentials, receptor physiology, transport mechanisms) to organ systems (cardiovascular, nervous, respiratory, gastrointestinal, urinary-renal and endocrine). Emphasizes regulatory control interactions needed for a holistic understanding of homeostasis and pathophysiology of humans. The course uses lectures, laboratories and clinical scenarios to teach the control mechanisms. Physiology is an intermediate step in the progression of knowledge acquisition necessary for subsequent courses. (7 credit hours) Prerequisite: Biochemistry

Pharmacology: An introduction to general principles of pharmacology, toxicology and drug classes. Emphasis is upon the mechanism of action, adverse effects, pharmacokinetics and drug interaction for the major drug

classes. Pharmacology is an intermediate step in the progression of knowledge acquisition necessary for subsequent courses. (5 credit hours) Prerequisite: Physiology

Cell Biology: This is an advanced course in cell biology designed to familiarize the students with modern concepts of cell and molecular biology. Topics to be covered will include transcription, translation, intracellular trafficking, cell-cell signaling, membrane transport, and structure and function of DNA. (3 credit hours) Prerequisite: Biochemistry

Biostatistics: This is an introductory course that exposes the student to the use of statistical techniques for research data analysis. Topics covered include research design, data acquisition, types of data, univariate and bivariate data summarization techniques, tabular and graphical data presentation, inferential techniques using different theoretical distributions and the use of multivariate statistical techniques. (3 credit hours)

Responsible Conduct in Biomedical Research: This course will discuss the ongoing process of reconciling regulations, guidelines, standards, and ethics to promote integrity in the proposing, planning, conducting, reporting and reviewing of research. (1 credit hour)

Presentation of Scientific Information: This is a one-hour-per-week class where students learn the basis of scientific presentation, and practice these concepts by participating in journal club presentations. (1 credit hour)

Special Topics: Each department that chooses to mentor master's degree students will develop an advanced class in their area of expertise. The basis of these classes will likely be to use primary literature to develop a sense of history, depth and emerging concepts in the selected field. (3 credit hours) Consent of the instructor is required.

Scientific Communication: This is a one-hour class in which students will present their scientific data to the University during the Friday Seminar Series. In addition, students will attend all of the Friday Seminar Series Lectures. (1 credit hour)

Introduction to Research: The course is designed to provide students with an introduction to research opportunities and laboratory safety procedures/policies at Des Moines University. Students will complete a survey of

research at Des Moines University, biomedical safety training and two four-week laboratory rotations. This course is designed to prepare students to work safely in a research environment and identify a thesis mentor. (1 credit hour)

Research: Bench research under the supervision of thesis advisor and thesis committee. (15 credit hours) Thesis committee approval required.

ACADEMIC STANDARDS AND GUIDELINES

The College of Osteopathic Medicine's Biomedical Sciences Program believes that clear academic expectations and carefully monitored performance will result in the graduation of the highest quality graduate students. Therefore, the College of Osteopathic Medicine provides the means to carefully monitor the growth of each student and to promptly assist if any academic or personal difficulties arise. The primary tools for academic monitoring and advising are the Biomedical Sciences Coordinating Committee, the Student Promotion and Evaluation Committee, the Offices of Academic, Student and Clinical Affairs and the faculty advisers.

Registration

Notification of availability and location of registration forms will be made via the student portal. (For more detailed information regarding University registration policies and procedures, refer to the Student Handbook.)

Religious Holidays

The administration and faculty are sensitive to the diverse religious affiliations of students. If an examination or other University activity is scheduled on the same day as a religious holiday, the student should contact the appropriate faculty member ahead of time to request other arrangements to complete the scheduled activity.

Evaluation of Student Academic Progress

Biomedical Sciences Coordinating Committee - This committee oversees the academic progress and personal development of each student during the years of training required for graduation.

Student Promotion and Evaluation Committee - This committee makes the final recommendations for graduation and

enforces the handbook. The Committee comprises three clinical and four basic science faculty members.

Grading System

Students receive a numerical or letter grade for each course. A grade of 70 percent or higher is needed to pass while scores below 70 percent result in a failing grade. In courses using letter grades, (P) designates pass and (F) denotes fail. A student who does not complete the required work may receive an "I" for incomplete while the work is being completed. Incomplete is not a final grade.

To remain in the Biomedical Sciences Program, students must maintain an 80% average in their coursework. This will be calculated at the end of each year.

Financial Aid Eligibility

Students must show satisfactory academic progress to remain eligible for financial aid. For specific eligibility requirements, refer to the section of this catalog titled "Tuition and Financial Aid."

Academic Regulations

The Student Promotion and Evaluation Committee may recommend appropriate action be taken if a student continues to do unsatisfactory work. The final decision rests with the dean of the College.

Remediation of failed courses/systems by examination is offered during the summer vacation period. Any course may be remediated only once.

Withdrawal

Application for voluntary withdrawal from the Program must be submitted in writing to the director. An exit interview with the director is requested before withdrawal or transfer.

The director may place a student on leave of absence or grant a request for leave of absence because of health problems, tragedy in the immediate family, unexpected financial setback or reasons agreed upon by one of the deans in consultation with the Student Promotion and Evaluation Committee.

Graduation

The University awards the graduate degree of Master of Science in the Biomedical Sciences (M.S.) upon recommendation of the faculty. The Student Promotion and Evaluation Committee reports annually to the faculty the names of students that have met requirements for the master's degree. To graduate, a student must:

1. Have successfully completed all

prescribed courses.

2. Successfully write and defend their thesis.
3. Be in attendance at the College of Osteopathic Medicine for the last 30 credits.
4. Be of good moral character and emotionally stable.
5. Show professional promise in the judgment of the faculty and receive the faculty's recommendation for graduation.
6. Satisfactorily discharge all financial obligations to the University.
7. Complete all graduation requirements, including the graduation clearance process.