Doctor of Medicine, M.D.

Requirements

The Doctor of Medicine is a four-year program that prepares students to practice primary care medicine and to pursue further education and training in specialized areas of medicine. The program admits 152 new students each year.

The M.D. curriculum is built on a triple-helix model whose three strands extend through all four years of medical school: the clinical and professional skills strand, the mechanisms of health and disease strand, and the medicine and society strand.

Clinical experiences begin during the first few weeks of medical school, and clinical clerkships start after just three semesters of preclinical instruction. By the end of the fifth semester, students have completed all of their core requirements and have the remaining three semesters to tailor their educational experience in preparation for their selected specialty.

Students complete in-depth clinical course work and serve clinical clerkships primarily at University of Iowa Hospitals and Clinics, the Iowa City VA Health Care System, and the Des Moines Area Medical Education Consortium. Students also may have opportunities to gain experience in private medical offices and community hospitals.

Graduates may pursue further training in the specialties of family medicine, internal medicine, surgery, and pediatrics at one of 10 University of Iowa-affiliated residency programs in six Iowa cities. They also have access to two transitional-year programs. For more information, contact the Office of Student Affairs and Curriculum and view the Student Handbook on the Carver College of Medicine website.

Preclinical Curriculum

The first three semesters of the M.D. program present an integrated core of sciences basic to the study of medicine. They also introduce students to the foundations of clinical practice.

Course work includes human anatomy, foundations of cellular life, a three-course series on clinical and professional skills, a three-course series on medicine and society, and a five-course series on multisystem mechanisms of health and disease. Each of these courses is described below.

Some elective courses are available to students during the first and second years, normally for 1 or 2 s.h. of credit. Topics include areas not specifically covered in the regular curriculum and areas related to medical practice and the role of the physician. Courses vary from year to year, but typical subject areas are global health issues, U.S. health care systems, and community health outreach.

The M.D. program’s preclinical curriculum requires the following course work.

First Semester

ACB:8101 Medical Gross Human Anatomy: complete dissection of the body with regional emphasis stressing relationships to the living system; clinically relevant areas of radiologic imaging, surface anatomy, embryology, and clinical correlations; anatomical knowledge through lectures, small group work, and independent activities.

MED:8121 Clinical and Professional Skills I: introduction to concepts of clinical reasoning, communication, physical examination, and evidence-based clinical practice; principles of biomedical ethics; early clinical interactions and placement of classroom experiences into the context of patient care through the Longitudinal Clinical Mentor (LCM) Program; interactions with students from other health sciences colleges to explore the interprofessional approach to caring for patients.

MED:8122 Medicine and Society I: delivery of individual disease prevention/health promotion services; introduction to social determinants of health; influence and impact of culture and the community on health care; community resources; students apply health and risk assessment to individual patients and to themselves.

MED:8123 Foundations of Cellular Life: genetics, embryology, molecular biology, biochemistry, cell biology and histology; molecular events required for cellular life; how cells grow and interact to form basic tissues of the human body; framework necessary for exploring the mechanisms of health and disease.

MED:8124 Mechanisms of Health and Disease I: normal and healthy processes within and among mechanisms of oxygenation, metabolism, and genetics/development.

Second Semester

MED:8131 Clinical and Professional Skills II: reinforcement of clinical reasoning concepts introduced in MED:8121 and introduction of additional concepts; application of concepts through interactions with standardized patients and through Longitudinal Clinical Mentor clinical visits; varied experiences help students gain a deeper appreciation for issues in biomedical ethics; strengths and barriers involved in providing comprehensive interdisciplinary patient care.

MED:8132 Medicine and Society II: knowledge and skills related to health promotion and disease prevention from a medicine and society perspective, including impact of behavior, environment, culture, and socioeconomics; identification of major public health problems associated with mechanisms of health and disease; focus on public health and epidemiology, with attention to screening, global health, and environmental hazards.

MED:8133 Mechanisms of Health and Disease II: normal and healthy processes within and among mechanisms of immunology/inflammation, locomotion/integument, and neuropsychiatry.

MED:8134 Mechanisms of Health and Disease III: abnormalities or disruptions leading to disease within and among mechanisms of oxygenation, metabolism, and genetics/development.

Third Semester

MED:8221 Clinical and Professional Skills III: advanced clinical reasoning skills gained through focused patient encounters and interactions with special patient populations; emphasis on students’ ability to integrate and use concepts from the M.D. curricular strands that are required for cost-conscious, patient-centered, interdisciplinary care.

MED:8222 Medicine and Society III: health services organization and delivery, with emphasis on community dimensions of medical practice and patient safety.
MED:8223 Mechanisms of Health and Disease IV: abnormalities or disruptions leading to disease within and among mechanisms of immunology/inflammation, locomotion/ integument, and neuropsychiatry.

MED:8224 Mechanisms of Health and Disease Keystone: transition from classroom instruction in MED:8124, MED:8133, MED:8134, and MED:8223 to clinical practice; foundational information from those courses approached from the perspective of common clinic encounters; diagnostic and management decisions about common important clinical problems using the foundational knowledge gained from those courses.

**Clinical Curriculum**

Students complete one week of skills training in MED:8320 Transition to Clerkships prior to the start of clinical clerkships. The two-and-a-half year clinical component of the medical curriculum is comprised of supervised hands-on clinical training at the bedside on in-patient units, in outpatient clinics, and in communities throughout the state. In contrast to the preclinical semesters, the clinical years vary according to a student’s individual needs. This period of training begins in January of the second year with 44 weeks of core clerkships. Students then enter various pathways where they complete a minimum of 12 weeks of selectives, four weeks of emergency or critical medicine, one four-week subinternship, and 36 weeks of advanced electives.

After completing the core clerkships, students must successfully complete Step 1 of the United States Medical Licensing Examination (USMLE) before they may be promoted to the pathways component of the curriculum. Students take Step 2 of the USMLE during the fall of their fourth year of the M.D. program.

During the advanced clinical years, students complete a minimum of 20 weeks of required clerkships (12 weeks of two-week subspecialty clerkships, a four-week emergency medicine/critical care, and a four-week subinternship), and 36 weeks of electives.

Primary venues for clinical training of medical students include University of Iowa Hospitals and Clinics, the Iowa City VA Health Care System, and the Des Moines Area Medical Education Consortium. Students also participate in the family practice preceptorship and the community-based primary care clerkship, which are off-campus rotations. Other courses may be assigned to off-campus sites, as well.

The M.D. program’s clinical curriculum requires the following clerkships and selectives.

**Generalist Core**

M.D. students complete the generalist core during the fourth and fifth semesters. It consists of the following 44 weeks of clerkships.

**Ambulatory Practice Module**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>MED:8301</td>
<td>Community-Based Primary Care</td>
<td>4</td>
</tr>
<tr>
<td>FAM:8301</td>
<td>Preceptorship in Family Medicine</td>
<td>4</td>
</tr>
<tr>
<td>IM:8302</td>
<td>Outpatient Internal Medicine</td>
<td>4</td>
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**Internal Medicine/Pediatrics Block**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>IM:8301</td>
<td>Inpatient Internal Medicine</td>
<td>6</td>
</tr>
<tr>
<td>PEDS:8301</td>
<td>Clinical Pediatrics</td>
<td>6</td>
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**Obstetrics and Gynecology/Surgery Block**

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>OBG:8301</td>
<td>Clinical Obstetrics and Gynecology (6 weeks)</td>
<td>6</td>
</tr>
<tr>
<td>SURG:8301</td>
<td>Clinical Surgery (6 weeks)</td>
<td>6</td>
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**Neurology/Psychiatry Block**

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<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>NEUR:8301</td>
<td>Clinical Neurology (4 weeks)</td>
<td>4</td>
</tr>
<tr>
<td>PSYC:8301</td>
<td>Clinical Psychiatry (4 weeks)</td>
<td>4</td>
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**Total Hours** 44

**Selectives**

After finishing the generalist core, M.D. students complete 12 weeks of selectives chosen from the following.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ANES:8301</td>
<td>Clinical Anesthesia (2 weeks)</td>
<td>2</td>
</tr>
<tr>
<td>DERM:8301</td>
<td>Clinical Dermatology (2 weeks)</td>
<td>2</td>
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<tr>
<td>OPHT:8301</td>
<td>Clinical Ophthalmology (2 weeks)</td>
<td>2</td>
</tr>
<tr>
<td>ORTH:8301</td>
<td>Clinical Orthopedics (2 weeks)</td>
<td>2</td>
</tr>
<tr>
<td>OTO:8301</td>
<td>Clinical Otolaryngology (2 weeks)</td>
<td>2</td>
</tr>
<tr>
<td>RAD:8301</td>
<td>Clinical Radiology (2 weeks)</td>
<td>2</td>
</tr>
<tr>
<td>URO:8301</td>
<td>Clinical Urology (2 weeks)</td>
<td>2</td>
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**Other Required Clerkships**

M.D. students complete the following additional required clerkships and other work during the three advanced clinical-year semesters.

<table>
<thead>
<tr>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Emergency medicine or critical care medicine</td>
<td>4</td>
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<tr>
<td>One subinternship</td>
<td>4</td>
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<tr>
<td>Advanced electives (total of 36 weeks during the fourth year)</td>
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**Joint M.D./Graduate Degrees**

The Carver College of Medicine offers a joint M.D./Ph.D. program for students who are interested in a career that combines clinical and academic medicine with basic and clinical research; see Medical Scientist Training Program in the Catalog.

The college also collaborates with other University of Iowa colleges to offer the joint M.D./M.B.A. program with the Tippie College of Business (see Master of Business Administration); the joint M.D./J.D. program with the College of Law (see Juris Doctor); and the joint M.D./M.P.H. program with the College of Public Health (see Master of Public Health).

Students must be admitted to both of the individual degree programs before they may be admitted to the joint degree program. Those interested in joint M.D./graduate degree programs must make arrangements with the appropriate graduate department and with the Carver College of Medicine associate dean for student affairs and curriculum.

**Admission**

The Carver College of Medicine participates in the American Medical College Application Service (AMCAS), a nonprofit centralized application processing service for applicants to U.S. medical schools. AMCAS applications are available for
completion in May of the year preceding the beginning of the class for which application is being made. Prospective students are urged to apply as early as possible. The deadline for AMCAS submission is November 1.

Secondary applications are forwarded to applicants whose AMCAS applications pass a review conducted by the college. A $60 fee must accompany the secondary application from all applicants.

Admitted applicants must have an official transcript from each college they have attended sent to the University’s Office of Admissions.

Technical Standards for Admission and Retention

The College of Medicine seeks candidates who will be able to serve the needs of society best and strives to graduate skilled and effective physicians. To achieve this goal, the following principles and technical standards will be applied to candidates for admission and continuing students.

Principles

• Technical standards refer to criteria that go beyond academic requirements for admission and are essential to meeting the academic requirements of the program.

• Students, with or without disabilities, applying to and continuing in the college will be expected to meet the same requirements.

• Matriculation and continuation in the college assume a certain level of cognitive and technical skill. Medical students with disabilities will be held to the same fundamental standards as their non-disabled peers. Although not all students should be expected to gain the same level of proficiency with all technical skills, some skills are so essential that mastery must be achieved, with the assistance of reasonable accommodations where necessary.

• Reasonable accommodations will be provided to assist in learning, performing, and satisfying the technical standards.

• Every reasonable attempt will be made to facilitate the progress of students where it does not compromise collegiate standards or interfere with the rights of other students and patients.

Applicants for admission to the College of Medicine and continuing students must possess the capability to complete the entire medical curriculum and achieve the degree. To this end, all courses in the curriculum must be completed successfully. In order to acquire the knowledge and skills to function in a broad variety of clinical situations and to render a wide spectrum of patient care, candidates for the M.D. degree must have abilities and skills in five areas including observation; communication; motor; intellectual, conceptual, integrative, and quantitative abilities; and behavioral and social attributes.

Technological compensation can be made for some disabilities in certain areas, but a candidate must meet the essential technical standards in such a way that the candidate will be able to perform in a reasonably independent manner. The use of a trained intermediary is not acceptable in many clinical situations as it implies that a candidate’s judgment must be mediated by someone else’s power of selection and observation.

Continuing students in the college are held to the same technical standards.

Observation: Students must have the functional ability to observe demonstrations and experiments in the basic sciences and must have sufficient use of the senses necessary to perform a physical examination.

Communication: Students must be able to relate reasonably to patients and establish sensitive, professional relationships with patients, colleagues, and staff. They are expected to communicate the results of the history and examination to the patient and to their colleagues with accuracy, clarity, and efficiency.

Motor: Students are expected to participate in basic diagnostic and therapeutic maneuvers and procedures. Those who cannot perform these activities independently should be able to understand and direct the methodology involved in such activities.

Intellectual, conceptual, integrative, and quantitative abilities: Students must be able to learn to analyze, synthesize, solve problems, and reach reasonable diagnostic and therapeutic judgments. Students are expected to be able to display good judgment in the assessment and treatment of patients. They must be able to learn to respond with prompt and appropriate action in emergency situations.

Behavioral and social attributes: Students are expected to be able to accept criticism and respond with appropriate modification of their behavior. Students also are expected to possess the perseverance, diligence, and consistency necessary to complete the medical school curriculum and enter the independent practice of medicine within a reasonable time frame. They must demonstrate professional and ethical demeanor and behavior in all dealings with peers, faculty, staff, and patients.

Cultural competency: Medical students must be able to communicate with and care for persons whose culture, sexual orientation, or religious beliefs are different from their own. They must be able to perform a complete history and physical exam on any patient regardless of the student’s and patient’s race, religion, ethnicity, socioeconomic status, gender, age, or sexual preference. Similarly, students must be able to interact professionally with colleagues and other health care professionals without regard to race, religion, ethnicity, socioeconomic status, gender, age, or sexual preference.

Applicants who may not meet these standards are encouraged to contact the College of Medicine Admissions Office.

Admission Requirements

Applicants for admission to the Carver College of Medicine must have a bachelor's degree, or they must be enrolled in a bachelor's degree program with the expectation of receiving their degree before enrolling in the Carver College of Medicine. Applicants must have earned college credit in the following courses.

Physics: a complete introductory course (one year), including lab instruction.

Mathematics: an advanced college mathematics course or a statistics course.

Biochemistry: can be taken to fulfill part of the chemistry or the advanced biology requirement.
**Chemistry:** a minimum of two years of chemistry, which must include general and organic chemistry with labs.

**Biological sciences:** a complete introductory course in the principles of biology with the appropriate laboratories, and an advanced biology course (one semester or quarter); recommended advanced biology courses include biochemistry, molecular and cell biology, human physiology, genetics, or microbiology.

**English:** two courses that include composition and literature; requirement may be waived if the applicant's institution integrates a writing requirement in courses across the curriculum.

**Social and behavioral sciences, and humanities:** four courses; since writing skills are important in the study and practice of medicine, candidates are encouraged to fulfill this requirement with courses that include a writing component; recommended courses include behavioral psychology, sociology, world language, and other courses that encourage a greater appreciation for diversity and cultural competency.

Applicants should have taken the required science courses for a grade rather than electing pass/fail grading.

Fulfillment of these requirements does not guarantee admission to the Carver College of Medicine. The college's admissions committee selects applicants who appear to be best qualified to study and practice medicine. Preference is given to Iowa residents with high scholastic standing. Consideration also is given to outstanding nonresidents.

Completion of the Medical College Admission Test (MCAT) is a requirement for admission. Applicants for the 2018 application cycle must have taken the MCAT between January 2014 and September 2017. The college will accept the pre-2015 MCAT for three years after the last test date (January 1, 2014). The MCAT is offered on various dates between January and September.

Personal interviews are part of the admission process. Candidates invited for an interview are contacted by the admissions committee. An external criminal background check is performed for all admitted students at the time of admission.

All students who enter the Carver College of Medicine are required to comply with the pre-entrance and annual health screening program developed by the University's Student Health & Wellness in cooperation with University of Iowa Hospitals and Clinics; see Requirements and Forms on the Student Health & Wellness website.

All registered Carver College of Medicine students are required to maintain health insurance (or an equivalent care plan) that satisfies minimum standards of coverage. Insurance coverage must be maintained continuously throughout each year of attendance at the University.

**Career Advancement**

An interest in science, the healing arts, helping people, and medical research can lead to a great number of satisfying careers. For information about career options in health care, review The Road to Becoming a Physician on the College of Medicine website and the Occupational Outlook Handbook.

**Financial Support**

The Carver College of Medicine’s philosophy is that no student should be denied a medical education due to a lack of financial resources. The college’s financial aid staff actively seeks sources of aid so that every student interested in a medical education will be able to finance that education.

Financial assistance is provided by the Carver College of Medicine primarily on the basis of demonstrated financial need. Although a limited number of collegiate or institutional grants are available for the most economically disadvantaged students, most aid is in the form of loans. Examples of federal loan programs are the Federal Direct Unsubsidized Stafford/Ford Student Loan, the Federal Direct Grad PLUS loan, and the Primary Care Loan (PCL). Students also may qualify for collegiate loans or private loans to supplement their financial aid package.

In addition, the college supports scholarship and loan programs through permanent endowments and/or contributions from alumni and friends of the Carver College of Medicine. These funds are administered by the college's financial aid office and are awarded as a part of a student’s total financial aid package. Funds to support short-term emergency loans are available for students with immediate financial need.

A small number of Dean’s Scholarships are awarded by the college's admissions office to highly qualified candidates on the basis of their academic excellence, leadership abilities, and their potential to enrich the college. Dean's Scholarships are included in the recipient's overall financial aid package.

To learn more about financial aid, contact the Carver College of Medicine Financial Services office.