

UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
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Since its founding one hundred and eighty years ago, the University of Michigan has been committed to providing an education that challenges students to become deeply and actively engaged in pursuit of understanding—an understanding of society, of the natural world, and of themselves. Our first president, Henry P. Tappan, expressed this commitment when he wrote that universities best educate students “by the self-creative force of study and thought, to make themselves both learned and wise, and thus ready to put their hand to every great and good work.”

This kind of education occurs inside and outside of the classroom. It comes from being confronted by new ideas and beliefs—ideas that matter and that sometimes are passionately held. It comes from testing one’s own ideas and beliefs in dialogue with others whose perspectives and experiences might be much different.

This is why the University of Michigan places great value on the diversity of its students and faculty. Having students and faculty from diverse backgrounds, representing a wide range of perspectives and talents, is critically important not only for instilling a positive sense of community within and beyond the University but also for creating the most vital intellectual and educational atmosphere. Racial and ethnic diversity is a critical component of this broader goal.

I invite you to join me as we continue to strive to create a community of learning where all thrive, secure in the knowledge that their histories and cultures are valued, and where we all have the opportunity to gain a deeper appreciation for the viewpoints and contributions of others.

Sincerely,

Lee C. Bollinger
University President

The Medical School is accredited by the Liaison Committee on Medical Education.

All information included in this booklet is subject to change by actions of the Medical School.

Letter from the Dean

Thank you for expressing an interest in the University of Michigan Medical School.

This publication is designed to provide you with information about our curriculum for the M.D. degree. Our medical students contributed enormous effort to descriptions of the courses and clinical clerkships, and information about student life, student organizations, and student health and well-being.

Students enter the University of Michigan Medical School from a wide variety of backgrounds, bringing a rich and fascinating diversity to the school. Within recent classes we have enrolled a professional umpire, a commercial pilot, a missionary, several Peace Corps volunteers, a sculptor, a professional hockey player, a Great Lakes freighter deckhand, and an archeologist. In recent years, about 30% of our entering students have expressed a strong commitment to careers in primary care medicine, and about 14% come from groups that are underrepresented in the medical field.

Now in its 150th year, the Medical School educates students to serve communities throughout the country and the world by providing outstanding medical care and engaging in the highest-quality medical research. Our program places significant emphasis on professional values and characteristics we consider to be essential to medical practice and investigation; these include compassion, honor, integrity and excellence.

We are very proud of our students, our graduates and our faculty. Together they represent our current and future commitment to caring for the health of a growing and changing society.

Thank you again for your interest in our program. If you still have questions after reviewing this booklet, please call our Admissions Office at (734) 764-6317.

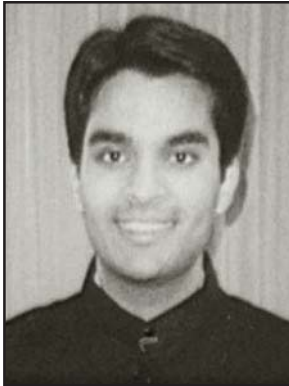


Allen S. Lichter, M.D.
Dean



Our program places significant emphasis on professional values and characteristics we consider to be essential to medical practice and investigation; these include compassion, honor, integrity and excellence.

Letter from the Medical Student Council President



Welcome to the University of Michigan Medical School. I am pleased that you have taken interest in learning about us. I will soon be completing my fourth and final year of medical school. As I look back, I can easily recognize that the UM Medical School, with its many assets and great opportunities, has helped make these past few years the most productive and exciting in my life.

The Medical School has been consistently recognized as one of the premier teaching and research institutions in the country. Over the years, I have had the opportunity to work with many of the faculty and staff, and I can say that this recognition is well deserved. The faculty are committed to teaching students, conducting cutting-edge research, and providing outstanding patient care. Over the next few years, the initiation of the Life Sciences Institute will help the University of Michigan continue to maintain its prestigious position at the forefront of research and technology in the area of health sciences.

The UM Hospitals are among the best. By adapting to the needs of the population, they continue to excel. Five years ago UM formed a comprehensive Cancer Center. Emergency Care can now boast of a Level 1 Trauma center that became fully active just within the last few months. This year's renovations for students include new histology laboratories, classrooms, and a study center. These are just a few examples of how UM is keeping pace by providing an optimal environment for patients, staff, and students.

The students are the Medical School's greatest asset. The diversity of backgrounds, the variety of interests, and the wide range of experiences with which they enter the program makes for a unique learning environment. Their motivation combined with the training they receive here makes UM graduates some of the most sought-after residents in the country.

Finally, the city of Ann Arbor is a great place to live. As the home of the Wolverines, it is a collegiate town with the peaceful atmosphere of a small, Midwestern city and the recreational and cultural advantages of a large city. Parks, theatres, clubs, restaurants, and exceptional sporting events are just some of the things that make up the broad social experience that is available in Ann Arbor.

I am confident I made the right decision to train at the University of Michigan Medical School. I know I have received a solid foundation on which to continue a lifetime of learning through residency and beyond. I invite you to learn more about this institution and all the opportunities it has to offer you as you tackle this challenging yet rewarding decision-making process.

Best Wishes,

*Samir Shah
President, 2001-2002 UM Medical Student Body*

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The competent, effective and compassionate practice of medicine and the advancement of knowledge about disease, its prevention and treatment require that physicians in training be introduced to a lifelong educational process. Medical school provides a critical phase of this education. The goals of the University of Michigan Medical School include educating individuals who are imbued with achieving the highest ethical and performance standards required to provide exemplary patient care, and graduating physicians who will assume leadership roles in the areas of clinical medicine, research and teaching. These goals will be attained when students have demonstrated:

1. A commitment to achieving personal and professional excellence including the critical evaluation of the performance of peers and self;
2. A strong foundation in the biomedical sciences, clinical medicine, and in those aspects of the humanities, social and behavioral sciences that are relevant to medicine;
3. The expertise to access and critically evaluate the scientific literature and to assimilate new scientific information;
4. The ability to apply the scientific method and an appreciation of how knowledge of basic science and clinical medicine is integrated and applied;
5. The ability to identify and reduce the risk factors that contribute to the major causes of morbidity and mortality;
6. Skillfulness in obtaining and interpreting relevant information from patients, laboratory data and other sources to deliver optimal patient care;
7. The ability to organize and interpret clinical information and to make clinical decisions effectively and efficiently;
8. Excellence in procedural skills and patient management;
9. Interpersonal skills that facilitate effective and empathic relationships with patients and effective collaborations with other health care professionals;
10. The professional attributes of compassion, honesty and integrity; and social and professional responsibility in the context of a diverse and changing society.

Endorsed by the Executive Faculty, October 24, 1991.
Modified and approved by the Curriculum Policy
Committee, August 30, 1996

GOALS OF MEDICAL STUDENT EDUCATION

THE SCHOOL AND THE CITY

History of the University of Michigan Medical School

The University of Michigan Medical School was the first medical school in the U.S. to own and operate its own hospital, the first major medical school to admit women and the first major medical school to base its instruction on science. The UM Medical School was also a pioneer in the introduction of the modern medical curriculum and the development of the clinical clerkships.

In the late nineteenth century the UM Medical School embarked on a mission to involve students as active participants—rather than passive observers—in their education, and to teach students how to acquire and interpret information.

These activities occurred during a period of profound change in medical education. The Medical School had opened its doors in 1850 and charged the first class of medical students \$5 a year for two years of education. The curriculum was all lecture, and the second year was a repeat of the first. None of the members in that first class were college graduates, and all were white males. To gain admission, they were required to know some Greek

and enough Latin to read and write prescriptions.

In 1870 the UM Medical School accepted its first woman, Amanda Sanford. Ms. Sanford was admitted on somewhat of a technicality in that the UM regents passed a resolution that year allowing any Michigan resident to enroll at the University; the resolution did not mention, and therefore did not exclude, women and African Americans. In 1873 W. Henry Fitzbutler became the first African American medical student to graduate from the Medical School. Mr. Fitzbutler was the son of a slave.

In the late 1870s the UM Medical School increased its annual term from six months to nine, and in 1880 a three-year curriculum was adopted, laboratory instruction was introduced, and grades were assigned. In 1899 the UM Medical School successfully introduced the clinical clerkship, having succeeded where other medical schools had failed largely because the UM owned its own hospital (privately-owned hospitals would not allow medical students to touch their patients).

At the start of the twentieth century, the UM Medical School led efforts to revise and improve medical curricula, doubling the length of the program for the M.D. degree and integrating clinical rotations into every student's course of study. In the 1950s through the 1960s sweeping changes were made in the UM's medical curriculum, including early student contact with patients and an inter-departmental course in the neurosciences. The late 1960s was an era of



increased clinical training in the first two (predominantly basic science) years of medical school. The UM, along with many medical schools across the country, adopted an interdepartmental Introduction to Clinical Medicine course that would remain a staple of the first two years for more than 20 years. In this same period, subinternships were introduced in the senior year; they remain part of the UM Medical School advanced clinical curriculum.

The UM Medical School continues its long tradition of excellence with a diverse and outstanding student body, world-renowned basic science and clinical faculty, a completely revised curriculum for the M.D. degree, and exceptional facilities for patient care, education and research.

Ann Arbor

Ann Arbor, home of the University of Michigan, combines the charm of a small town with the cultural and recreational opportunities of a big city. Individuals from all over the country and the world live and teach in Ann Arbor and add to the city's sophistication, excitement and diversity.

Located in southeastern Michigan, Ann Arbor is 40 miles west of metropolitan Detroit. The Huron River winds through Ann Arbor and many of the city's parks are on its banks. Because of its lovely tree-lined streets and many parks, Ann Arbor is known as "Tree City."

Lower Michigan is a fabulous place for enjoying all four seasons. Spring in Ann Arbor is beautiful as trees come into bloom and flowers abound on and off-campus. Summer, occasionally hot but mostly quite temperate, is a great time to enjoy the parks and lakes in Ann Arbor and areas close by. The city's many trees provide spectacular color in the Fall, when the air is brisk and skies often sunny. Winter is variable, some years it is quite warm with little snow and other years it is cold, clear and a cross-country skier's paradise.



The University of Michigan is one of the few major academic medical centers that is not located in an urban setting. I chose UM over several other schools because I knew that Ann Arbor would be much more conducive to my academic and personal growth than the center of a big city.

Carey Lumeng, Medical Scientist Training Program,
Class of 2000



Ann Arbor boasts a symphony orchestra, a civic theater, and many outstanding restaurants. Farmers from surrounding areas sell their produce on Wednesdays and Saturdays at the very popular Farmer's Market on Fourth Street. The Borders brothers opened their first book store in Ann Arbor 25 years ago.

The University's Central Campus is incorporated into the downtown State Street shopping/business area. In addition to the majestic and beautiful Angell Hall, Student Union, Hill Auditorium and other university buildings, there are libraries, galleries, shops, museums and theaters.

The University of Michigan has 51,000 students and 5,600 faculty on its three campuses. The UM Medical School ranks ninth among all medical schools in terms of NIH awards, while the UM's Medical School, College of Engineering, Law School, School of Business Administration, School of Dentistry, College of Pharmacy, School of Nursing, School of Public Health and School of Social Work all rank in the top ten nationally.

The Medical Center is within easy walking distance of downtown, and there are also free rides on the University buses which connect all parts of the campus. Most medical students live in apartment complexes that are within a short and delightful walk to the medical campus.

In the 1998-99 academic year, 671 medical students at the University of Michigan were actively working toward their M.D. degree.

ADMISSIONS

Admission Requirements

Each University of Michigan Medical School applicant must have completed:

- at least a four-year high school education, or equivalent, and
- at least three years (90 semester hours) of course work in an accredited college or university within the United States or Canada.

Applicants must be U.S. citizens or permanent residents of the United States. Permanent residents and others who did not attend U.S. or Canadian schools should complete at least one year, and preferably two, in residence at an accredited college in North America. All previous academic credits must be validated by the accredited college.

Students who have been previously enrolled in a medical school program leading to the M.D. degree must be in good standing at that institution in order to receive even initial consideration for admission to the University of Michigan Medical School as a first year student.

Subject Requirements

Following are the subject requirements for matriculation into medical school. Grades below "C" will not be accepted in any of the following required courses:

Chemistry:

8 semester hours (including laboratory work)

General inorganic and organic chemistry, with at least three hours of laboratory work, are required. Work in qualitative analysis, quantitative analysis, and physical chemistry is acceptable.

Biochemistry:

3 semester hours

A general biochemistry course is required. It should include the topics of pH and dissociation; structure and chemistry of amino acids, peptides, sugars, fats and nucleic acids; kinetics; thermodynamics; and subcellular structure and function. Students should also have been introduced to the topics of enzymology, carbohydrate metabolism, biological oxidation, and molecular biology. Laboratory work in biochemistry is not required.

Biology:

6 semester hours (including laboratory work)

This requirement may be satisfied by six semester hours in either general biology or zoology, or by courses of three semester hours each in zoology and botany, but not botany alone. Some exposure to genetics is recommended.

Physics:

6 semester hours (including laboratory work)

English Composition and Literature:

6 semester hours

Non-science subjects:

18 semester hours

At least 18 semester hours, including the six semester hours of English Composition and Literature noted above must be in subjects other than physical, chemical, biological sciences, or math.

The above list indicates minimum requirements but it should not be inferred that admission is probable for any applicant who meets them.

Since the many fields of medicine offer opportunities for those talented in both the humanities and the sciences, students should allow personal interests to dictate their choice of undergraduate major. In general, the study of a few subjects in depth is recommended. We also recommend courses in genetics and cell biology, as these topics contribute to preparation for the Medical School curriculum.

The Application Process

The Medical School participates in the American Medical College Application Service (AMCAS). Individuals interested in applying to the University of Michigan Medical School should obtain an application from their premedical counselor or from AMCAS. The AMCAS address is:

American Medical College Application Service
Association of American Medical Colleges
2501 M. Street, N.W., Lobby 26
Washington, D.C. 20037-1300
<http://www.aamc.org/>

Return the completed application directly to AMCAS *before November 15*. AMCAS will forward applications to our Medical School Admissions Office. Upon receipt of the completed application from AMCAS, the Admissions Office will forward further instructions to the applicant.

Applications may be filed on the basis of work completed, plus work in progress that will be completed before the start of medical school. Your official scores on the Medical College Admission Test will be reported to the medical schools you have designated.

It is the responsibility of the applicant to insure that the application is complete and that all required and requested information is forwarded to the Admissions Office. The Medical School notifies all applicants when their applications are received.

The Admissions Committee

After a preliminary screening of credentials, interviews with those applicants who are being seriously considered for admission are scheduled. This personal contact affords the interviewers an opportunity to explore the materials already in hand, and also permits the candidate to further support the application, and to ask questions about the Medical School.

The Admissions Committee, composed of Medical School faculty and students, strives to identify the best potential physicians from among the thousands of applications received each year. All students applying for admission are considered on the basis of individual qualifications.

Attributes evaluated include:

- motivation,
- academic preparation,
- character, and
- personal fitness for the study of medicine.

The academic record and Medical College Admission Test (MCAT) furnish an estimate of academic preparedness. The less tangible qualities of motivation, character, and personal fitness are judged from activities, letters of recommendation, personal statement, and the interview.

All interviews are at the invitation of the Medical School. Where considerations of time and distance make an interview in Ann Arbor impractical, other arrangements may be made. No student is accepted without an interview. The Medical School reserves the right to close the file on any application without an interview and solely on the basis of credentials submitted.

The Admissions Committee welcomes all information that will assist in the selection of those applicants best suited to become physicians.

If Accepted

A student offered a position in the next entering class is required to accept or decline the offer within a specified period, by returning official forms to the Admissions Office. No enrollment deposit is required until May of the entering year. Accepted applicants are given financial aid information and forms in January, and a packet of housing, immunization, and other information in early May. Deferrals may be granted at the discretion of the Assistant Dean for Admissions. Individuals who have been given alternate status may be offered a spot in the class at any time there is a vacancy, until the first day of orientation in mid-August.

Matriculation into the Medical School occurs only after the student has satisfactorily completed all requirements for admission and has submitted an official copy of his/her final undergraduate transcript with degree posted.

Advanced Standing and Transfers

Because of the integration of clinical content with basic sciences in our curriculum, there is no provision for advanced placement. Students who have previously taken graduate level or medical school courses are not exempted from enrolling as full-time students in all required course work.

The University of Michigan Medical School does not accept any transfer students from other medical schools, regardless of their academic standing or personal situations.

Early Decision Program

The University of Michigan Medical School participates in the AMCAS Early Decision Program. Students interested in applying through this program will make one application only to the school that is their first choice. Students will be asked to sign a pledge that they will not apply to any other medical school before a decision has been reached on their Early Decision Application. Applicants to this program are expected to have excellent academic credentials.

Applicants considered for early decision are interviewed during August and September. The Admissions Committee decisions are made by October 1, after which applicants are notified of their status. Unsuccessful applicants are sent rejection letters or letters indicating that they will be considered later in the regular application process. These applicants should apply without delay to other medical schools in which they are interested.

Combined Degree Programs

MD/MPH

A number of students each year choose to pursue the Master of Public Health degree. The School of Public Health at Michigan is rated one of the best in the country. Programs of study include Biostatistics, Environmental and Industrial Health, Epidemiology, Health Behavior and Health Education, and Health Management and Policy.

Typically, medical students apply to the School of Public Health after they have arrived in Ann Arbor and begun medical studies. They usually take a leave of absence from medical school after the second year, enrolling for a year of public health courses. They return for the final two years of clinical work in medicine, and usually complete all requirements for the



Master of Public Health degree and the MD within five years.

Inquiries can be addressed to:

University of Michigan School of
Public Health
Ann Arbor, MI 48109

or obtain more information at the web page
address: <http://www.sph.umich.edu/>.

MD/MBA

The goal of the University of Michigan MD/MBA Combined Degree Program is to provide opportunities for students to explore and integrate complementary interests and career goals that combine medicine and business. The MD/MBA Program is a five-year integrated program. Students accepted into the Program will spend their first three years in Medical School, completing the M1, M2, and M3 course work. These students will then matriculate in the Business School to complete the full first year MBA course load as their fourth program year, and complete an MBA summer internship between the fourth and fifth program years. In the fifth year, students will spend one semester completing the MD requirements, and the other semester completing the MBA requirements.

Although most students will apply to the MBA program during the M3 year, prospective medical students may indicate to the Medical School's Admissions Office their intent to seek the MBA degree. Admission to the MD/MBA Program is highly competitive and is not automatic. Applicants are expected to have demonstrated outstanding academic achievement and professionalism in Medical School. Applicants must receive Medical School endorsement for admission to the MD/MBA Program through the Clinical

Academic Review Board. This will include rigorous review of the applicant's overall medical school performance, personal statement, and any other relevant materials.

Students must also formally apply for the Business School's Decision II Deadline (January) by completing the standard MBA application (<http://www.bus.umich.edu/apply>) and fulfilling all listed requirements, including the GMAT exam, essays, letters of recommendation, and transcripts. Students are encouraged to set up an interview through the Business School Admissions Office. Business School officers have been advised that Medical School students will be applying for the Decision II deadline and they will give these applicants full consideration.

For additional program information, contact
Kathleen Atkins, atkinsk@umich.edu

MD/JD and Other Combined Degrees

At this time, there are no other formal combined degree programs. However, the medical school provides flexibility for students who wish to combine their education with additional courses or a degree program in many fields.

MEDICAL SCIENTIST TRAINING PROGRAM

The Medical Scientist Training Program (MSTP) is a joint effort of the University of Michigan graduate and medical schools to provide a superb and balanced training in science and medicine. The MSTP, which is open to citizens or permanent residents of the United States, attracts excellent students who are committed to a career in biomedical research.

The MSTP curriculum generally requires seven full calendar years, but many fellows take eight.

Typically, MSTP fellows begin with the two-year *Pre-Clinical Phase* in the curriculum for the M.D. degree, additional graduate course modules in biological chemistry or other areas, and laboratory rotations in the summers. All fellows must pass the USMLE Step 1 (medical licensure) exam before becoming full-time graduate students. In the *Graduate Phase*, they complete the requirements for Ph.D. candidacy including preliminary examinations, thesis research, and a written dissertation. After defense of the dissertation, fellows return to the M.D. curriculum to take the *Clinical Phase* of their education, including all required clerkships, a subinternship, electives and the USMLE Step 2 examination. In recognition of the interdependency of the degrees, the M.D. and Ph.D. degrees are conferred by the University only after completion of both.

Many doctoral programs are available to students, including Anatomy and Cell Biology, Biological Chemistry, Cellular and Molecular Biology, Human Genetics, Microbiology and Immunology, Neuroscience, Pharmacology and Physiology. Other closely related programs available include Biomedical Engineering, Biophysics, Medicinal Chemistry and Pathology. Entering MSTP fellows are not required to choose a doctoral field until midway through the second year.

MSTP fellows receive full tuition support, health insurance and an annual stipend. Seven to nine students are admitted to the program each year. For more information, please contact:

Medical Scientist Training Program
7310 Medical Science Building I
University of Michigan
Ann Arbor, Michigan 48109-0624
(734) 764-6176
<http://www.umich.edu/medschool/MSTP>

The UM Medical School invites selected incoming first-year students to participate in a six-week summer pre-matriculation program designed to help them enhance their academic and study skills, to introduce them to the Medical School course work and the Medical School faculty, and to acquaint them with academic and personal support services.

There are introductory courses in Molecular and Cellular Biology (MCB) and Anatomy (including Embryology), cooperative learning seminars for refining learning skills, and a comprehensive program of study skills including time management, note taking, memorization and self-motivation. Small-group discussions introduce students to personal development issues such as communication styles, self-awareness and sensitivity to others, and leadership skills.

PRE-MATRICULATION PROGRAM



TUITION, FEES, EXPENSES AND FINANCIAL AID

Tuition, Fees and Expenses

The 2001-02 tuition and fees for residents of the State of Michigan are \$19,320; for nonresidents the tuition and fees are \$29,696. Tuition and fees are subject to change without notice by action of the Regents of the University. One-half of the tuition is payable at the beginning of the University's fall term, and the remaining half at the beginning of the winter term. Tuition/fees also may be paid in two installments (for example, installment due dates for 2000 were September 30 and October 31 for the fall term).

Laboratory Fees

Small fees are required in some of the laboratory courses of the first two years.

Microscopes

During the first year, microscopes are furnished for use in the basic science laboratories.

Books and Supplies

Departments will specify basic texts and instructional materials for purchase by each student.

Budgets

The total cost of medical school attendance will vary depending on living arrangements, personal needs and habits. The expenses listed reflect a modest, but adequate standard of living for the academic year. There is some allowance for discretionary expenditures but there is no provision for costs that are not directly related to school attendance.

2001-2002 Budget for First Year Students

Michigan Resident:

Tuition/Fees (est)	\$19,320
Instruments/Supplies	\$575
Books and Journals	\$1,370
Insurnace/Health Expenses	\$475
Room and Board	\$9,500
Transportation	\$2,750
Misc expenses	\$2,462
Total Expenses	\$36,452

Non-Resident:

Tuition/Fees (est)	\$29,696
Instruments/Supplies	\$575
Books and Journals	\$1,370
Insurnace/Health Expenses	\$475
Room and Board	\$9,500
Transportation	\$3,450
Misc expenses	\$2,462
Total Expenses	\$47,528

Financial Aid

Several sources of financial assistance are available to registered medical students. This assistance may be in the form of scholarships, loans, or grants-in-aid to help qualified students meet expenses. Eligibility is based on current federal, state, and University guidelines for financial aid administration. Allocation is based on demonstrated need and availability of funds.

The vast majority of these programs require parental income-asset information—regardless of a student's age, actual dependency or marital status—to determine a student's eligibility for financial assistance.

Financial aid application packets are sent to students upon their acceptance to the UM Medical School, and funds are made available at the beginning of each semester. Short-term loans are available for extreme financial emergencies.

The Financial Aid Office

UM Medical School students are consistently very pleased with the system of financial aid at Michigan. The Medical School's Financial Aid Office is well-aware of how busy medical students are, and the office staff members work to simplify the process of applying for and receiving funding. Advisors work with students in unique situations, such as those needing additional funding for child care.

Students generally find the budgets modest but sufficient to meet their needs in Ann Arbor. The Financial Aid Office has responded to student requests in the past for increased funding (for example, an additional loan is available to clinical students to cover the added cost of paying for meals while on call).

Annually, the office sponsors a financial workshop for all aid recipients in the fourth year of medical school. Invited speakers introduce students to the complexities of loan repayment as well as options and strategies. Also, all fourth-year students have a one-on-one session with the financial aid advisors to further review their outstanding loan portfolio.

Finances are rarely mentioned by UM Medical School students as a source of stress, and this is largely due to the extensive services provided by the Financial Aid Office.

For information and/or applications for financial aid, contact:

University of Michigan Medical School
Financial Aid Office
4130 Medical Science I, C-Wing
1301 Catherine Street
Ann Arbor, Michigan 48109-0611
(734) 763-4147



Technical Standards

The M.D. degree signifies that its holder is a physician prepared for entry into the practice of medicine within postgraduate training programs of diverse types. The M.D. degree is, and must remain, a broad undifferentiated degree attesting to the mastery of general knowledge in all fields requisite for the practice of medicine.

Thus, medical school graduates must possess the knowledge and skills necessary to function in a broad variety of clinical situations, and to render a wide spectrum of patient care. The University of Michigan Medical School acknowledges section 504 of the Rehabilitation Act of 1973 (Public Law 93-112), Title II of the Americans with Disabilities Act (Public Law 101-336), and the Michigan Handicappers Civil Rights Act, and ascertains that candidates for the M.D. degree must possess certain minimum technical capabilities.

The Medical School's obligations are to seek candidates who will be best able to serve the needs of society and to graduate effective and competent physicians. The following principles and technical standards will be implemented to achieve this goal.

Principles

1. Technical Standards refer to criteria that go beyond academic requirements for admission (e.g. MCAT, GPA, faculty letters) and are essential to meeting the academic requirements of the program.
2. Students with or without disabilities applying to Medical School will be expected to have met the same requirements.
3. Matriculation in Medical School assumes 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 all technical skills, mastery of some skills is so essential that it must be achieved, with the assistance of reasonable accommodation where necessary.
4. Reasonable accommodations will be provided to assist in learning, performing and satisfying the fundamental standards.
5. Every reasonable attempt will be made to facilitate the progress of students where it does not compromise the Medical School standards or interfere with the rights of other students and patients.
6. Technological accommodations can be made for some handicaps in certain areas of the curriculum, but a candidate must

meet the essential technical standards so that he or she will be able to perform in a reasonably independent manner. The need for personal aids, assistance, care givers, readers, and interpreters, therefore, may not be acceptable in certain phases of the curriculum, particularly during the clerkship years.

7. When not the responsibility of the student or otherwise funded, costs of necessary accommodations should be reasonable and will be properly borne by the University.
8. Applicants and matriculants who believe that they have not received adequate consideration because of a disability may appeal to the Medical School which will review appeals on a case-by-case basis.

Technical Standards

Candidates for the M.D. degree must possess abilities and skills including those that are observational, communicational, motor, intellectual-conceptual (integrative and quantitative), and behavioral and social. The use of a trained intermediary is not acceptable in many clinical situations in that it implies that a candidate's judgment must be mediated by someone else's power of selection and observation.

I. Observation

The candidate must be able to acquire a defined level of required information as presented through demonstrations and experiences in the basic sciences, including but not limited to information conveyed through physiologic and pharmacological demonstrations in animals, microbiological cultures and microscopic images of microorganisms and tissues in normal and pathologic states. Furthermore, a candidate must be able:

- to observe a patient accurately, at a distance, and close at hand, to acquire information from written documents, and to visualize information as presented in images from paper, films, slides or video.
- to interpret x-ray and other graphic images, and digital or analog representations of physiologic phenomenon (such as EKGs) with or without the use of assistive devices.

Such observation and information acquisition necessitates the functional use of visual, auditory and somatic sensation while being enhanced by the functional use of other sensory modalities. In any case where a candidate's ability to observe or acquire information through these sensory modalities is compromised, the candidate must demonstrate alternative means and/or abilities

to acquire and demonstrate the essential information conveyed in this fashion. If the alternatives are acceptable, it is expected that obtaining and using such alternate means and/or abilities shall be the responsibility of the student.

II. Communication

A candidate must be able to speak, to hear and to observe patients by sight in order to elicit information, describe changes in mood, activity and posture, and perceive nonverbal communications. A candidate must be able to communicate effectively and sensitively with patients. Communication includes speech, reading and writing. The candidate must be able to communicate effectively and efficiently in oral and written form with all members of the health care team.

III. Motor

It is required that a candidate possess the motor skills necessary to directly perform palpation, percussion, auscultation and other diagnostic maneuvers, basic laboratory tests and diagnostic procedures. The candidate must be able to execute motor movements reasonably required to provide general and emergency medical care such as airway management, placement of intravenous catheters, cardiopulmonary resuscitation, application of pressure to control bleeding, suturing of 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.

IV. Intellectual-Conceptual (Integrative and Quantitative) Abilities

The candidate must be able to measure, calculate, reason, analyze, integrate and synthesize. In addition, the candidate must be able to comprehend three-dimensional relationships and to understand the spatial relationships of structures. Problem solving, the critical skill demanded of physicians, requires all of these intellectual abilities. The candidate must be able to perform these problem-solving skills in a timely fashion.

V. Behavioral and Social Attributes

The candidate must possess the emotional health required for full utilization of his/her 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. The candidate must be able to tolerate physically taxing workloads

and to function effectively under stress. He/she must be able to adapt to changing environments, to display flexibility, and to learn to function in the face of uncertainties inherent in the clinical problems of patients. Compassion, integrity, concern for others, interpersonal skills, interest and motivation are all personal qualities that will be assessed during the admissions and educational processes.

Any applicant will be considered for admission to Medical School who demonstrates the ability to acquire the knowledge necessary for the practice of medicine, as well as the ability to perform or to learn to perform the skills as described in this document. Students will be judged not only on their scholastic accomplishments but also on their physical and emotional capacities to meet the full requirements of the school's curriculum and to graduate as skilled and effective practitioners of medicine. Each applicant will be asked to certify that he or she is able to meet the technical standards of the school.

Information on Residency Classification for Admission and Tuition Purposes

Authority

The governing board at each university in Michigan has the authority to determine residency classification guidelines for admission and tuition purposes. Therefore, residency guidelines may vary from school to school and are independent of guidelines used by other state authorities to determine residency for purposes such as income and property tax liability, driving and voting.

The following guidelines were approved by the University of Michigan's Board of Regents to take effect Spring Term 1998 and to apply to students at all campuses of the University of Michigan. The guidelines are administered by the Residency Classification Office in the Office of the Registrar at the Ann Arbor campus, 1514 LSA Building, University of Michigan, 500 S. State St., Ann Arbor, MI 48109-1382. Phone: (734) 764-1400

The Student's Responsibilities and the Residency Application Process

It is the student's responsibility to read the University Residency Classification Guidelines contained in this document and to apply for admission and register under the proper residency classification. It is also the student's responsibility to file an Application for Resident Classification for an official determination of status. Students are encouraged to consult with staff in the Residency Classification Office if they have questions or need assistance.

The admissions offices at the various schools and colleges within the University perform the initial screening for residency classification. If a student indicates Michigan resident status on the admissions application and the admissions office questions that status, the student will be classified as a nonresident and notified of the need to file an Application for Resident Classification with the Residency Classification Office. The fact that a student's claim to residency for University purposes is questioned does not necessarily mean that he or she will be ineligible; it simply means that the student's circumstances must be documented and reviewed by the Residency Classification Office. Failure on the part of admissions staff to question a student's claim to resident eligibility does not relieve the student of the responsibility to apply and register under the proper residency classification. Furthermore, the University reserves the right to audit enrolled or prospective students at any time with regard to eligibility for resident classification and to reclassify students who are registered under an improper residency classification.

Until an Application for Resident Classification is filed and approved, a student who previously attended any campus of the University of Michigan as a nonresident will continue to be classified as a nonresident at all campuses.

Upon application for admission to any campus of the University, an individual who claims eligibility for resident classification must file an Application for Resident Classification for an official determination of status if any of the following circumstances apply:

- the individual is living out of state at the time of application to the University
- either parent is living out of state (applies if the individual is 24 years of age or younger)
- the individual has attended or graduated from an out of state high school (applies if the individual is 24 years of age or younger)
- the individual has attended or graduated from an out of state high school and has been involved in educational pursuits for the majority of time since graduation from high school
- the individual has had out of state employment or domicile within the last 3 years

The above list is not exhaustive. An individual is responsible for filing an Application for Resident Classification in any situation where the individual's eligibility for residency under these Guidelines could be reasonably questioned.

Filing Deadlines

Students may apply for resident classification for any term in which they are enrolled or intend to enroll. The deadline dates for filing the Application for Resident Classification are the same for all University of Michigan schools, colleges and campuses.* The following dates apply to the term for which residency is sought. If the deadline falls on a weekend, it will be extended to the next business day.

Fall Term September 30
Winter Term January 31
For all Spring, Spring/Summer, and Summer Terms July 31

(*For the On Job/On Campus program, filing deadlines are 30 calendar days after the first scheduled day of classes.)

Documentation Which Must Be Included When Filing for Resident Classification

When filing an Application for Resident Classification, the following documentation must be included with the Application form:

- for all applicants: a copy of the driver's license of the applicant and of the person or persons upon whom the applicant is basing the claim to resident eligibility
- for all applicants: copies of the front and signature pages of the most recent year's federal and state income tax returns and W2s for the applicant and the person or persons upon whom the applicant is basing the claim to resident eligibility
- for applicants born outside the U.S.: verification of U.S. citizenship or visa status
- for applicants who are dependents: (see Residency Classification Guideline B-1), copies of the front and signature pages of the parents' most recent year's federal and state income tax returns
- for applicants whose claim to eligibility for resident classification is based on permanent, full-time employment for themselves, a parent, spouse or domestic partner: a letter from the employer, written on letterhead (including phone number), stating the position, status and dates of employment. The letter should be accompanied by a copy of the most recent pay stub showing Michigan taxes being withheld.

Applicants are also responsible for providing any other documentation necessary to support their claim to resident eligibility. Additional documentation may be requested by the Residency Classification Office.

Appeal Process

If an Application for Resident Classification is denied by the Residency Classification Office, the student may request that his or her file be reviewed by the University's Residency Appeal Committee. The appeal request must be made in writing and must be received in the Residency Classification Office within 30 calendar days of the date on the denial letter. If the deadline falls on a weekend or University holiday, it will be extended to the next business day.

All contact with the Residency Appeal Committee must be in writing. Personal contact with a member of the Committee prior to the meeting could disqualify the member from participating in the decision. A student who wishes the Committee to consider additional information must submit the information to the Residency Classification Office, in writing, with the appeal request. The information will then be forwarded to the Residency Appeal Committee with the student's file.

The student will receive a written decision from the Committee when the review is complete. Once the Residency Appeal Committee issues its decision there are no further appeals for the term covered by the application.

Misrepresentation and Falsification of Information

Applicants who provide false or misleading information or who intentionally omit relevant information in an application for admission, an application for resident classification or any other document relevant to residency eligibility may be subject to legal or disciplinary measures. Students improperly classified as residents based on this type of information will have their residency classification changed and may be retroactively charged non-resident tuition for the period of time they were improperly classified.

Residency Classification Guidelines

For University purposes, "domicile" is defined as the place where an individual intends his/her true, fixed and permanent home and principal establishment to be, and to which the individual intends to return whenever he or she is absent. These Guidelines are designed to explain how a student may demonstrate the required intent and establishment of a domicile in Michigan. An individual whose activities and circumstances, as documented to the University, demonstrate that he or she intends to be domiciled in Michigan and has, in fact, established a domicile in Michigan will be eligible for classification as a resident. An individual whose presence in the state is based on activities or circumstances that are indeterminate or temporary, such as (but not limited to) educational pursuits, will be presumed not to be domiciled in Michigan and will be classified as a nonresident. The burden of proof is on the applicant to demonstrate with clear and convincing evidence that he or she is eligible for resident classification under these Guidelines.

These Guidelines describe situations that create presumptions of resident and nonresident status. The fact that a presumption of resident status may apply to a student does not mean that the student will automatically be classified as a resident or that the student is relieved of the responsibility for filing an Application for Resident Classification. (See The Student's Responsibilities and the Residency Application Process on page 18.) To overcome a presumption of nonresident status, a student must file a residency application and document with clear and convincing evidence that a Michigan domicile has been established.

A. General Guidelines

1. Circumstances which may demonstrate permanent domicile
The following circumstances and activities, though not conclusive or exhaustive, may lend support to a claim to eligibility for resident classification:

- both parents (in the case of divorce, one parent) permanently domiciled in Michigan as demonstrated by permanent employment, establishment of a household and severance of out of state ties
- applicant employed in the state in a full-time, permanent position provided that the applicant's employment is the primary purpose for the applicant's presence in Michigan
- spouse or domestic partner employed in the state in a full-time, permanent position provided that the spouse's or partner's employment is the primary purpose for the student's presence in Michigan

2. Circumstances which do not demonstrate permanent domicile
The circumstances and activities listed below are temporary or indeterminate and, in and of themselves, do not demonstrate permanent domicile:

- enrollment in high school, community college or university
- participation in a medical residency program, fellowship or internship
- employment that is temporary or short-term
- military assignment
- employment in a position normally held by a student
- ownership of property
- presence of relatives (other than parents)
- possession of a Michigan driver's license or voter's registration
- payment of Michigan income or property taxes
- the applicant's statement of intent to be domiciled in Michigan

3. One year continuous presence

In cases where it is determined that an applicant has not demonstrated establishment of a domicile in Michigan as defined by these Guidelines, the University will require the applicant to document one year of continuous physical presence in the state as one of the criteria for determining eligibility for resident classification in any subsequent Application for Resident Classification. The year to be documented will be the one year immediately preceding the first day of classes of the term in question. The year of continuous presence is never the only criterion used for determining resident eligibility, and, in itself, will not qualify a student for resident status. If substantial and new information arises which changes the circumstances of a student's presence in Michigan and which clearly demonstrates the establishment of a Michigan domicile, the student may be immediately eligible for resident classification prior to the passage of one year.

In documenting the year of continuous physical presence in Michigan, the applicant will be expected to show actual physical presence by means of enrollment, employment, in-person financial transactions, health care appointments, etc. Having a lease or a permanent address in the state does not, in itself, qualify as physical presence. Short-term absences (summer vacation of 21 days or less, spring break and break between fall and winter term), in and of themselves, will not jeopardize compliance with the one year requirement. In determining the effect of a short term absence, the nature of the absence will be assessed to determine whether it is contrary to an intent to be domiciled in Michigan. Absences from the state in excess of the time mentioned above or failure to document physical presence at the beginning and end of the year will be considered as noncompliance with the one-year continuous presence requirement.

B. Residency Presumptions in Particular Circumstances

The fact that a presumption of resident status may apply to a student does not mean that the student will automatically be classified as a resident or that the student is relieved of the responsibility for filing an Application for Resident Classification. (See The Student's Responsibilities and the Residency Application Process on page 18.)

1. Dependent Students

For University residency classification purposes, a student is presumed to be a dependent of his or her parents if the student is 24 years of age or younger and (1) has been primarily involved in educational pursuits, or (2) has not been entirely financially self-supporting through employment.

a. Residents

i. Dependent Student — Parents in Michigan

A dependent student whose parents are, according to University Residency Classification Guidelines, domiciled in Michigan is presumed to be eligible for resident classification for University purposes as long as the student has not taken steps to establish a domicile outside of Michigan or any other action inconsistent with maintaining a domicile in Michigan.

ii. Dependent Student of Divorced Parents — One Parent in Michigan

A dependent student whose parents are divorced is presumed to be eligible for resident classification for University purposes if one parent is, according to University Residency Classification Guidelines, domiciled in Michigan. The student must not have taken steps to establish an independent domicile outside of Michigan or any other action inconsistent with maintaining a domicile in Michigan.

iii. Dependent Resident Student Whose Parents Leave Michigan

A student who is living in Michigan and who is, by University Residency Classification Guidelines, permanently domiciled in Michigan does not lose resident status if the parents leave Michigan, provided: (1) that the student has completed at least the junior year of high school prior to the parents' departure, (2) that the student remains in Michigan, enrolled as a full-time student in high school or an institution of higher education, and (3) that the student has not taken steps to establish a domicile outside Michigan or any other action inconsistent with maintaining a domicile in Michigan.

b. Nonresidents

Dependent Student — Parents not in Michigan

A dependent student whose parents are domiciled outside the state of Michigan is presumed to be a nonresident for University purposes.

2. Michigan Residents and Absences From the State

Individuals who have been domiciled in Michigan according to University Residency Classification Guidelines immediately preceding certain types of absences from the state may retain their eligibility for resident classification under the conditions listed below:

a. One Year Absence

An individual who has been domiciled in Michigan immediately preceding an absence from the state of less than one year may return to the University as a resident for admission and tuition purposes provided: (1) that the individual has maintained significant ties to the state during his or her absence, and (2) that the individual severs out of state ties upon returning to Michigan.

While a student described in this subsection is presumed to have retained his or her eligibility for resident classification, an individual who has been absent from the state in excess of one year (and who does not fall within the circumstances described at (b) - (c) below) may still be able to prove eligibility for resident classification if the student: (1) has not established a domicile outside Michigan; (2) demonstrates the continuous maintenance of a Michigan domicile throughout his or her absence (e.g., payment of Michigan taxes, maintenance of Michigan driver's license and Michigan voter's registration, active bank/business accounts, and parents still in the state); and (3) severs all out of state ties upon returning to Michigan.

b. Absence for Active Duty Military Service (Army, Navy, Air Force, Marines, Coast Guard), Missionary Work, Peace Corps or Similar Philanthropic Work

An individual who is domiciled in Michigan at the time of entry into active military duty, missionary work, Peace Corps or similar philanthropic work does not lose eligibility for resident classification as long as he or she is on continuous active duty and continuously claims Michigan as the state of legal residence for income tax purposes. Dependent children of such an individual are also eligible for resident classification, provided: (1) that they are coming to the University directly from high school or they have been continuously enrolled in college since graduating from high school, and (2) that they have not claimed residency for tuition purposes elsewhere.

c. Absence for Education or Training

An individual who is domiciled in Michigan immediately preceding an absence from the state for full-time enrollment in school or for a medical residency program, internship or fellowship does not lose eligibility for resident classification provided: (1) that the individual has maintained significant ties to the state during his or her absence (e.g., parents still in the state, payment of state taxes, active business accounts), and (2) that the individual has not claimed residency for tuition purposes elsewhere.

3. Residence Status of Immigrants and Aliens

Only persons who are entitled to reside permanently in the United States may be eligible for resident classification at the University. These individuals, like U.S. citizens, must still prove that they have established a Michigan domicile as defined in these Guidelines. Having the privilege of remaining permanently in the United States, in itself, does not entitle a person to resident classification for University purposes. The Residency Classification Office will review the circumstances of the following classes of immigrants:

- Permanent Resident Aliens (must be fully processed and possess Permanent Resident Alien card or stamp in passport verifying final approval by filing deadline for applicable term)
- Refugees (I-94 card must designate "Refugee")
- A, E (primary), G and I visa holders*

(*Based upon current law, these nonimmigrant visa classifications are the only ones that permit the visa holder to establish a domicile in the United States. The University Registrar shall update this list as changes occur in applicable law.)

PRE-CLINICAL CURRICULUM



Thank you for your interest in our program. Component II provides medical students with information required to understand disease processes. The year is divided into individual sequences which are organized in an organ system approach. Each sequence teaches the pathophysiology and clinical manifestations of the major diseases which affect that system.

Sequences are taught in a multidisciplinary fashion, and teaching is provided by faculty from several different departments. This multidisciplinary approach prepares students for clinical training by introducing the essentials of diagnosis and clinical management.

Work with simulated patients continues during the second year and students also perform supervised patient histories and physical examinations in a hospital setting.

The faculty rely on formal student input to develop and implement the most effective educational program that also accommodates different student learning styles. Our students do very well on the national licensing examination at the end of the second year, and they are well-prepared to begin clinical training in the third year.

Please direct your questions to the Office of Medical Education, via electronic mail at meded@umich.edu or by telephone at (734) 763-3265.

A handwritten signature in dark ink that reads "Roger J. Grekin".

*Roger J. Grekin, M.D.
Director, Component II
Professor of Internal Medicine*

Thank you for your interest in the University of Michigan Medical School. I want to introduce you to our medical curriculum, which is composed of educational experiences that prepare students for medical careers ranging from primary care to the most advanced biomedical research specialties.



In the first year, Component I provides students with a basic foundation in both biomedical sciences and clinical skills. Component II is a series of disease and organ-system sequences (e.g., oncology, cardiovascular, hematology) designed to prepare students for their patient-centered clinical educational experiences in the third and fourth years.

Beginning early in Component I students work with simulated patients (individuals trained to act as real patients) and real patients as they learn to conduct medical interviews and physical examinations. This instruction involving patients is broad, and students receive feedback from the patients and faculty. First-year students also have an opportunity to participate in many hands-on laboratory and small-group learning activities.

We have adopted Satisfactory/Fail grading and weekly quizzes in Component I. This recognizes the heterogeneous backgrounds of our students as they adjust to medical school, and provides them with frequent feedback on how they are doing in their courses.

The students have prepared the course and sequence descriptions that follow. If you have questions about our program that are not addressed please contact the Office of Medical Education by electronic mail at meded@umich.edu or by telephone at (734) 763-3265.

A handwritten signature in dark ink that reads "K. Sue O'Shea".

*K. Sue O'Shea, Ph.D.
Director, Component I
Associate Professor of Anatomy and Cell Biology*

Component I

Medical students have prepared the following descriptions of the Component I year and courses.

The primary goal of Component I (the first-year curriculum) is to provide a strong foundation in basic biomedical science and to prepare students for the detailed basic science content that will occur in a clinically-oriented framework in Component II.

The grading scale in the first year is Satisfactory (75%) and Fail. The faculty adopted this system in the first year to foster student cooperation and to allow students with very different academic backgrounds to adapt to the rigors of medical school without feeling the pressure to compete for a High Pass or Honors grade.

Evaluation in all Component I courses is based on multiple choice, matching, and true-false exams, and also laboratory and practical exams. There are weekly quizzes with questions from all courses, and midterm and final examinations in each course. Weekly quizzes encourage students to keep up with the course material on a weekly basis and also allow them to get frequent feedback on how they're doing in the courses.

Throughout the Year

Introduction to the Patient (ITTP)

(32 weeks)

The ITTP course begins early in the first year with an introduction to multicultural patient care. This experience is designed to raise the students' awareness of the different cultures they will encounter as providers of medical care. Lectures, small group discussions and encounters with simulated patients (individuals trained to portray patients) introduce students to the fundamentals of the medical interview, the physical examination and the patient experience. ITTP includes a patient-centered interdisciplinary "Human Growth and Development" sequence. Topics include physiologic and psychosocial developmental changes through the life cycle, and nutritional requirements and issues related to preventive medical care. Medical ethics, medical economics, social and cultural issues, and other topics essential to the education of physicians complete ITTP and round out the first-year curriculum.

Molecular and Cell Biology (MCB)

(22 weeks)

Students study the basic biology of cells and tissues through daily lectures, textbook reading and small group conferences (some facilitated by fourth-year medical students). In nine blocks (Introduction to the Cell, Information, Proteins, Regulation of Metabolism, Membrane Structure and Function, Signal Transduction, Neuronal

The curriculum in general is a wonderful program. I am really enjoying my first year because it is satisfactory/fail. We still want to know the material but it takes the edge off and allows the class to get to know each other, Ann Arbor and the medical school routine!

Aaleya Koreishi, Medical Student



I was amazed that the people teaching our first-year courses are the senior MDs and scientists, department chairs and authors of our class texts. Not only can they tell us what has been published in the latest journals (sometimes before actual publication), they are also accessible to and interested in students. I've found the faculty at Michigan to be encouraging and supportive, both on academic issues and students' well-being. I'm really glad I chose Michigan.

Katy Gold, Medical Student

The Introduction to the Patient (ITTP) reminds us that medicine is in part interacting with people and not just their diseases. The Introduction to Multicultural Patient Care is an excellent addition to the curriculum in that it reminds us that people are distinct individuals with many cultural beliefs that can affect their medical care. Small group discussions about these topics are excellent.

Joel Ying, Medical Student

Cells, Cell Motility and Force Generation and Extracellular Matrix), students master fundamental principles of cell biology necessary to understand both current concepts of disease and the breakthroughs that will impact medical practice throughout their careers.

Multidisciplinary Conferences (MDCs) (throughout the year)

MDCs occur two-three times a month throughout the first year. They are designed to enhance, and place in a clinical context, material learned from the courses during the previous weeks, and to introduce students to clinical decision-making skills. Formats vary and include patient presentations, panel discussions and question/answer sessions.

Fall Term

Gross Anatomy (16 weeks)

Students study anatomy via multiple modalities to suit their learning style. Required lectures and dissection labs are the basis of the course, supplemented by pre-dissected models, state-of-the-art computer-aided instructional programs, an extensive database of self-tests and detailed textbooks and atlases. An introduction to radiographic anatomy is also part of the course.

Human Genetics (8 weeks)

Geneticists provide students with an introduction to basic molecular genetics and population genetics. Discussions explore ethics involved in the emerging field of gene therapy. Specific genetics diseases are used as illustrations of basic science principles, and clinical correlations are introduced by inviting patients to participate in classroom presentations.

Pathology (7 weeks)

This is consistently one of the medical students' favorite courses in the first year. Students are able to, as the course director says, "satisfy their appetite for the strange and bizarre" as they study the basic mechanisms of disease, discover the answers to such medical trivia as, "Define a trichobezoar" and begin to learn some of the fundamental vocabulary of medicine.

Winter Term

Embryology (6 weeks)

After finishing anatomy, students gain a deeper understanding of the process of formation of the human body in embryology. Through daily lectures, readings from a textbook authored by the course director, state-of-the-art computer models and a computer database of self-test resources, students examine the basis of normal development as well as congenital anomalies and malformations. The study of the basic science

of reproduction serves as the introduction to the more clinically-oriented reproductive sequence in the second year.

Histology

(16 weeks)

Students are provided with microscopes and hundreds of prepared slides for the review of the histology of normal human tissue. Lectures and laboratory are supplemented by atlases and state-of-the-art computer models. Electron micrographs and an introduction to histopathology are also included.

Host Defense

(6 weeks)

Humans have developed defense mechanisms to cope with a world dominated by potentially harmful microbes. In Host Defense, students study the fundamentals of the inflammatory cascade and the body's reaction to foreign invasion. Also discussed are the cellular and molecular bases of allergic diseases, cancer immunology, organ transplantation, and how they relate to human disease.

Microbiology

(3 weeks)

Students learn the basis of the microbial life cycle, including principles of structure, physiology and genetics, and how these come into play during microbial interaction with a host. These studies are a preamble to the overview of specific microorganisms relevant to human disease presented in the second year.

Pharmacology

(6 weeks)

Students master the basic principles of pharmacokinetics (how drugs enter the body, how they are distributed to various sites of action, and how their actions are terminated by metabolism or secretion) and pharmacodynamics (how drugs act with receptor sites on cells, principles that affect how the intensity of drug responses is related to the drug dose, and common factors that can affect responses, such as age and genetic makeup) as a basis for understanding the mechanisms of hundreds of medications utilized in clinical practice.

Physiology

(15 weeks)

Students receive the much-anticipated introduction to the normal functioning of the human body. Sequentially they master six organ systems: circulatory, respiratory, renal, gastrointestinal, endocrine and reproductive; these studies form the basis for understanding the manifestations of disease presented in the second year.



I really look forward to the simulated patient experiences. These not only serve to develop and sharpen clinical skills in an effective manner, but also serve as a nice change of pace from the academic workload.

Dennis Tong, Medical Student

While the pre-clinical years must focus primarily on the basic science areas of medicine, the Medical School strives to include relevant clinical information and experience whenever possible. For example, as first-year medical students, we were honing our medical interviewing skills with nursing home residents while learning and practicing the physical exam with our classmates. M2s are frequently in the hospital performing histories and physicals on real patients. It's a great learning experience and good practice for the true clinical years.

Patrick Javid, Medical Student



Component II

Medical students have prepared the following descriptions of the Component II year and sequences and experiences.

There are no departmental courses in Component II. The year is organized into twelve organ system and disease-based sequences, each of which is planned and taught by an integrated multidisciplinary planning team. The sequences are presented one at a time so that students can focus on a particular system before moving on to the next. Pathology lab sessions run concurrently with class and small-group activities and focus on content carefully correlated with the sequences.

Within each sequence, detailed consideration is given to the physiology of a particular organ system, the pathology of important diseases of that system, immunologic and microbiologic aspects of those diseases, and the pharmacologic approach to them. Course material is presented in a variety of formats, including case presentations, lectures, small group discussions, laboratory sessions, computer exercises, and a range of student-centered exercises.

Occasional quizzes continue in Component II, however, each quiz is focused on the sequence taught at that time. At the end of each sequence a final exam is administered. The grading scale

in the second year is Honors, High Pass, Pass and Fail. Each sequence is graded separately and grades are based on quizzes and exams.

Following are the second-year sequences, in the order they are completed by the students.

Infectious Diseases (I.D.)

(4 weeks)

Having mastered the basics of microbial life in the first year, students start immediately reviewing the vast array of bacteria, viruses and parasites that play a role in human disease. The microbiology of each organism is examined in concert with its manifestations in the human body and treatment. Lectures are complemented by small discussion groups facilitated by infectious disease experts, hands-on laboratory experiences to gain necessary skills in culture and staining techniques, and a computer practicum to master vaccinations. The I.D. sequence serves as the foundation for infectious processes in every organ system to be studied throughout the second year.

Hematology

(3 weeks)

Among the topics studied are anemia, leukemias, lymphomas, blood dyscrasias and solid organ tumors. Lectures are complemented by small-group discussions led by hematology and oncology experts in which patient cases are discussed.

There are also laboratory sessions in which students master the skills of deciphering a blood smear and recognizing the histopathology of cancers.

Oncology

(1 week)

The molecular basis of neoplasia and fundamental principles of tumor cell biology are presented in a patient-focused format. Lectures are combined with patient presentations and case-based pathology laboratories.

Cardiovascular

(3 weeks)

A brief review of cardiovascular physiology precedes this series of presentations on essentials of cardiac pathology. Topics studied include congestive heart failure, arrhythmias, valvular disease, atherosclerosis, hypertension and shock. Pharmacologic therapy and histopathology complete the sequence. Computer simulations assist the students in an introduction to learning heart sounds and electrocardiography.

Respiratory

(2 weeks)

Directed by a faculty member who invented ECMO (extracorporeal membrane oxygenation), the respiratory sequence focuses on disease states in the respiratory system, including asthma, lung cancer, chronic obstructive pulmonary disease, cystic fibrosis and adult respiratory

distress syndrome. The basics of mechanical ventilation are discussed and important skills including analyzing blood gas values are introduced. Laboratory sessions complete the histopathology portion, and students spend a day in the hospital, rotating through intensive care units and pulmonary function labs where they gain experience with the clinical relevance of the material studied in the sequence.

Renal

(2.5 weeks)

Students learn about the characteristics and mechanisms of renal disease including such diseases as lupus, glomerulonephropathies, renal cell carcinoma and nephrolithiasis. A brief introduction to urologic disease is also included. Histopathology slides are available on the Internet and complement the laboratory sessions.

Dermatology

(1 week)

One of the goals of this sequence is to expose the students to a broad array of skin diseases and dermatologic manifestations of systemic disease. Lectures are complemented by laboratory sessions and a very popular session in which students rotate through clinical examination rooms, meeting patients with dermatologic symptoms and conditions. With each patient is a dermatology faculty member who explains the patient's skin manifestations.

The Standardized Patient Instructors benefit all students. The best way to learn an examination is to perform one, and the SPIs are very well-trained and can provide specific, immediate feedback and guidance regarding a student's performance on a physical exam. Our confidence as future physicians is bolstered by these positive interactions, and by accomplishing potentially-uncomfortable parts of the physical exam. The Standardized Patient Instructors help students to acquire a professional demeanor.

Jessica Ulbrich, Medical Student

My experiences with my clinical skills instructor in the hospital have been overwhelmingly positive. I have gained important skills examining patients, and my instructor has given me both constructive criticism and good advice to help me develop my clinical skills. The chance to learn from and get to know an experienced physician has been one I won't forget.

Paul Jawanda, Medical Student



Gastrointestinal

(2.5 weeks)

Topics include gastroesophageal reflux disease, gastric colon and esophageal cancers, diarrheal diseases, inflammatory bowel diseases and others. Small group discussions reviewing case studies with gastroenterology faculty and histopathology lab sessions are integral parts of the sequence.

Neurosciences

(7 weeks)

The sequence begins with a review and expansion of neurophysiology topics. Laboratory sessions begin with a more in-depth study of neuroanatomy, which was initially studied in the first-year anatomy course. Preserved specimens, plastinated specimens and extensive computer programs are all available for study in addition to laboratory exercises mentored by neuroanatomy faculty. The sequence progresses to cover neurologic diseases such as stroke, aneurysms, cancers, and degenerative processes. A significant part of the sequence focuses on psychiatry. A "special senses" (hearing and sight) section of the course finishes the sequence. The laboratory sessions conclude with a review of the histopathology of the spectrum of neurologic disease.

Endocrine

(2 weeks)

Topics studied include thyroid disease, parathyroid disease, diabetes and growth hormone disorders. Lectures are complemented by extensive small-group sessions with endocrinology faculty

in which case studies are discussed. Histopathology laboratories complete the curriculum.

Reproduction

(2 weeks)

Students study normal reproduction, building upon the foundation presented in the first-year Embryology course. Infertility is discussed in addition to various gynecologic diseases. Histopathology is presented in the laboratory sessions.

Musculoskeletal

(2 weeks)

Topics presented include rheumatologic disease, degenerative myopathies, and cancer of the musculature and skeleton. Histopathology is covered in the laboratory sessions. Students learn a detailed rheumatologic exam in afternoon sessions tutored by trained patients with rheumatologic disease. The program, which has received national recognition, is rated very highly by the students.

Introduction to the Patient (ITTP)

(all year)

In the second full year of this course students master the complete history and physical examination under the tutelage of individual clinical faculty who serve as clinical skills instructors. Classic cardiac and pulmonary findings are demonstrated using ambulatory patients. Male genito-urinary and female pelvic examinations are taught with the help of simulated patient instructors, who are individuals trained to portray

patients in scripted encounters with medical students. Topics related to medicine and society, sexuality, behavioral medicine, and violence in society are also presented and discussed.

Multidisciplinary Conference (MDCs)

(throughout the year)

Each Friday during Component II multidisciplinary conferences are presented by faculty from numerous departments to enhance and place in a clinical context the content learned during the week. Conferences are presented in a variety of active formats, including case presentations and panel discussions.



Simulated Patient Instructor Sessions

The UM Medical School has a four-year longitudinal program of clinical skills instruction using simulated (also known as standardized) patient instructors (SPIs) with whom medical students interact throughout medical school. SPIs are non-physicians who are trained to play a patient role in encounters with medical students, and who then provide feedback to the students. These encounters are generally one-on-one but can occur with small groups of students. Medical students meet with SPIs in progressively more demanding encounters designed to teach them content and process skills, and communication skills they will need to provide efficient and appropriate health care to patients. Some of the encounters are:

- The medical interview (first year)
- Breast and cardiac exams (first year)
- Sexually transmitted diseases/risk assessment interview (second year)
- Smoking cessation/behavior modification counseling (third year)
- Breaking bad news to the patient (third year)
- The adolescent interview (third year)

Students are enthusiastic about the SPI sessions and give them high ratings.

UNITED STATES MEDICAL LICENSURE EXAMINATION (USMLE)

STEPS 1 AND 2

UM Medical School students take the USMLE Step 1 exam after completing the second-year curriculum. Passing is a prerequisite for advancement to the clinical years. The mean performance of UM Medical School students on the Step 1 exam from 1986-1998 has been consistently above the national average.

Students take the USMLE Step 2 exam after completing the required clerkships in the third year. Passing is a requirement for graduation. Over the last nine years, the mean performance of UM Medical School students on the Step 2 exam has been consistently above the national average.



Letter from the Director, Components III and IV

Thanks very much for your interest in our medical education program at the University of Michigan Medical School. For several years I have served as Director of Components III and IV, which are the clinical years in our curriculum.

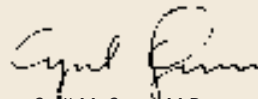
When University of Michigan medical students successfully complete the preclinical years, the focus of learning shifts from the lecture halls and laboratories to the patients you will care for in the clinics and hospitals. Third- and fourth-year medical students become a part of a team, helping to deliver high-quality health care to patients while at the same time learning to be competent physicians. Students at our Medical School rotate through many departments, and are exposed to a wide variety of experiences and disciplines.

Our students receive excellent education and training, providing them with a firm foundation upon which each may build a successful career as a physician. The curriculum is designed to help students make the transition from student to professional, to ensure that they acquire the appropriate knowledge and skills needed to be competent physicians, and to prepare them for the lifelong learning experience that is essential to their success in any medical field.

All third-year students complete the same core of required clerkships. Although within each discipline the site may vary, the educational goals are identical and the experiences very similar. At the end of the third year, students should have a broad understanding of medicine and be ready to refine their skills in the coming year.

Fourth-year students have a few required experiences, however they have a lot of flexibility in designing their schedule. They are encouraged to broaden their learning experiences by delving deeper into areas of interest, and also sampling areas in which their exposure has been limited.

The following pages have been prepared by our medical students to provide a thumbnail description of the experiences in the third and fourth years of training at the University of Michigan Medical School. I hope you find the information interesting, and if you have any questions please feel free to contact the Office of Medical Education at meded@umich.edu or (734) 763-3265.



Cyril M. Grum, M.D.

Director, Components III and IV

Professor of Internal Medicine

Associate Chair for Undergraduate Medical Education, Internal Medicine

CLINICAL CURRICULUM



My experience at the VA Hospital has been great. You get to do a lot for the patients, you have a lot of responsibility, and the doctors respect your capabilities.

Diana Sweet, Medical Student

Component III

Medical students have prepared the following descriptions of Component III clerkships and experiences.

The third year of Medical School is an exciting time for students as they formally enter the clinical phase of their education.

Component III consists of four twelve-week blocks that are spent on required clerkships within the University's core system, including the University of Michigan Hospitals, Ann Arbor Veteran's Hospital, St. Joseph Mercy Health System, William Beaumont Hospital, and the Oakwood Healthcare System.

The third-year schedule is uniform for all students in terms of experiences, however, students may rank their preferences for the order in which they take the clerkships (there are four possibilities; see diagram), for their surgical subspecialty rotation, and for different locations within the core system.

The class comes together for the weekly Seminars in Medicine which integrate clinical information and generate discussion on topics of ethical and professional concern.

Students receive information from each of the departments on expectations, clinical experiences, and how they will be evaluated. The full grading scale—Honors, High Pass, Pass and Fail—is used for the Component III clerkships.

Family Medicine

(4 weeks)

As the health care system continues to change, the family practitioner is becoming an increasingly integral part of every patient's experience with medical care. All UM medical students are required to rotate through a four-week Family Medicine experience. Assigned to various private practices and community clinics throughout southern Michigan, students gain broad experience in the comprehensive care of individuals and their families in the context of their psychosocial, economic and community environments.

Internal Medicine

(12 weeks)

Students gain broad experience in obtaining a thorough history and performing a physical examination, focusing thereafter on the essentials of diagnosis and gaining an introduction to the management of medical problems. Experiences include inpatient exposure on general medicine wards, and experiences on the pulmonary, gastro-intestinal, liver, rheumatology, nephrology, cardiology, hematology and oncology services. Many students also spend one month in outpatient clinics, rotating through general medicine and all the subspecialty clinics. The types of pathology students gain exposure to varies widely with the services they experience, however, every student will inevitably work with patients with heart disease, diabetes, asthma and the multiple disease states associated with smoking, alcoholism and obesity. Students gain exposure to x-ray

reading in a weekly lecture, use computer models to assess a broad array of diagnostic problems and take part in a simulated patient exercise to practice the methods of producing behavioral change (persuading patients to stop smoking). Daily teaching rounds and textbook reading complete the student's experience.

Neurology

(4 weeks)

Students master a detailed neurologic examination through experiences in the inpatient and outpatient settings. Neurologic diseases such as multiple sclerosis, stroke, myasthenia gravis, migraine and diabetic neuropathy are all commonly encountered, in addition to brain tumors and many less common entities. Daily teaching rounds accompany textbook reading.

Obstetrics/Gynecology

(6 weeks)

Students assigned to different locations have a range of diverse experiences centered on providing a consistent core fund of knowledge. Several weeks are devoted to obstetrics, where students learn the prepartum care of both routine and complicated pregnancies. Students get hands-on experience in routine vaginal deliveries and Caesarean sections. They then follow the mothers until discharge to learn about postpartum issues.

Exposure to infertility, teen pregnancy, diabetes and high-risk pregnancy all occur in the Obstetrics/Gynecology clerkship. Students master the routine pelvic exam, learn to identify basic pathology and assist in gynecologic surgery. Some students are also assigned to a week of gynecologic oncology. Clinical experience is complemented by a daily lecture series, mentoring by an assigned faculty member and textbook reading.

Pediatrics

(6 weeks)

Students spend one week in neonatology and the rest of the time is divided between inpatient and outpatient pediatrics. In addition to a focus on general pediatrics in the ambulatory setting, students also receive exposure to clinics in pediatric cardiology, nephrology, hematology-oncology, rehabilitation, adolescent medicine, and child abuse. On the inpatient service, students participate directly in the initial work-up of the child and the day-to-day management. As full members of the health care team, students gain broad experience in the often difficult task of the physical exam of the child. Students often build trusting relationships with children and their parents. Clinical experience is supplemented with daily teaching rounds and lectures, an extensive syllabus, textbook reading and a brief paper on a pediatrics topic chosen by the student.

The third year of medical school has been one of the most exciting experiences in my life. For the first time, we are able to interact with patients in a meaningful way. I learned a great deal about medicine by following patients and interacting with physicians at all levels of training.

Paul Park, Medical Student



The wide variety of options available during the senior year has allowed me to achieve a number of goals. I was able to schedule several electives in the two areas of surgery that I am considering for a career, which definitely helped me to focus on my career objectives. Also, the wide variety of medical subspecialties available provided me with an opportunity to “fill in” some areas that I won’t be formally exposed to again.

Amy Falor, Medical Student

As a fourth-year sub-intern, one of my most valuable experiences was having the responsibility of discussing treatment options, test results and personal concerns with my patients and their families. The experience was invaluable.

Anna Griffith, Medical Student

Psychiatry

(4 weeks)

Through exposure to inpatient, outpatient and ER settings, students learn to recognize common psychiatric illnesses in their patients including depression, anxiety disorders, schizophrenia and autism. A basic familiarity with psychiatric medications is acquired and students generally become more comfortable working with mentally ill individuals. Teaching rounds and textbook reading serve as the basis of formal learning and are complemented by a simulated patient experience focusing on alcoholism.

Surgery

(12 weeks)

Students learn to recognize the “potentially surgical patient” and learn the appropriate method of diagnosis and evaluation of the surgical problem. Students spend the majority of time on the inpatient service, following patients preoperatively, assisting in the operation and then following patients postoperatively until their discharge. General Surgery lasts eight weeks and includes two month-long rotations in either general surgery or pediatric, vascular, trauma, oncology, endocrine or gastrointestinal surgery. A third month is a surgical selective. Students may choose from neurologic, orthopedic, plastic, thoracic or urologic surgery, in addition to anesthesiology, emergency room, ophthalmology and otolaryngology. Daily lectures and textbook reading complement experiences on the wards and in the operating room.

Educational Experiences in Component III

These experiences were created to augment instruction occurring on the clinical clerkships. They are graded on a Satisfactory/Fail basis.

Seminars in Medicine

These are two-hour conferences that occur almost every Friday afternoon during the third year. They are designed to enhance patient-based learning and introduce issues in the legal, ethical, social and economic fields, and they also emphasize concepts spanning all of clinical medicine such as reading the EKG and managing IV fluids. Other examples of seminars offered include The Addicted Professional, Adolescent Risk-Taking Behavior, and Medical Malpractice.

Comprehensive Clinical Assessment (CCA)

The Comprehensive Clinical Assessment is designed to test each student's clinical skills to ensure that an acceptable level of mastery has been acquired at the completion of Component III. The CCA is thirteen to fourteen stations where students are presented with clinical issues including cardiac and ophthalmologic diseases, EKG and x-ray interpretation, and encounters with patients. Students interview and examine real and simulated patients, and in many stations are observed by a faculty member who provides immediate feedback. The CCA allows students to focus on the essential skills they are expected to possess as medical school graduates, and provides them with a formal assessment of their skills. Satisfactory performance on the CCA is required for graduation.

Component IV

Medical students have prepared the following descriptions of the Component IV experiences.

The fourth year consists of eleven four-week periods; two of which may be used as vacation months and for interviewing. Students are encouraged to seek a full and balanced combination of experiences as they pursue personal medical interests and investigate medical fields in which they have no previous experiences.

Fourth-year experiences are graded using the full grading scale of Honors, High Pass, Pass and Fail.

General requirements exist, but are not tied to specific departmental courses. Each fourth-year student must complete at least nine months of clerkships; up to three of these months may be devoted to research experiences. Students also have the opportunity to elect clerkships at hospitals throughout the country and the world. Most off-campus experiences are arranged by students and all require the approval of the appropriate clerkship director.

Basic senior requirements include:

Subinternship

In the eight-week subinternship, each fourth-year student, as an active member of the health care team, assumes major responsibility for patient care. Students enjoy the subinternship enormously because they have primary responsibility for the care of their patients, and greater autonomy in patient care decision-making. As sub-interns, students are given as much responsibility for their patients' care as is possible within legal limits.

Intensive Care Unit (ICU) Experience

Often taken concurrently with the subinternship, the ICU experience provides not only an opportunity for students to participate in the management of critically ill patients with diseases or conditions affecting multiple organ systems, but



Having the flexibility to spend several months doing rotations outside the University Hospitals enabled me to appreciate differences in approaches and philosophies regarding medicine and health care.

Araba Afenyi-Annan, Medical Student

Fourth-year students have a lot of freedom in selecting their schedules. Participating in rotations throughout the U.S. proved to be a wonderful and enriching experience.

Lela Weems, Medical Student

Whether it's spending a month with children affected with bleeding disorders or traveling to Africa to experience third world medicine, the fourth-year curriculum affords students opportunities that should not be missed.

Brian Griffith, Medical Student

The fourth year of medical school is the best for several reasons. First, the large number of electives allows you to experience a variety of medical specialties in a variety of locations. Second, the subinternship is an opportunity to experience what it's like to be a doctor with all of the responsibilities and rewards of patient care. Finally, it is the only year of medical school in which your reading is directed by patients and curiosity rather than an impending examination, making it much more interesting.

David Weissman,
Medical Student



also the opportunity to witness the profound effects of life-threatening acute illness on patients and their families. Students find the ICU to be of particular educational value because the immediate effects of treatments are frequently more evident in patients who are so unstable.

Advanced Basic Science Experience

This experience is also called Science in Clinics, and is designed to update and augment students' basic science knowledge. These rotations typically allow students to focus on one or a few specific problems in depth, which students report is very satisfying intellectually after three years of absorbing information at a breathtaking rate. Having now acquired a solid clinical base, students can appreciate the basic science underpinnings of medicine more clearly than before.

Electives

Students can choose from more than 200 electives offered at the UM and UM-affiliated hospitals, in addition to working with faculty to develop independently structured experiences. Formally-structured rotations range from trauma surgery in Detroit to developmental pediatrics to a critical review of the influence of law on medical practice. Students are encouraged to sample widely in the senior year, while also maintaining appropriate rigor, ample clinical exposure, and a suitable blend of experiences. Up to three electives may be taken nationally or internationally.

Student Evaluation of the Curriculum and Teachers

The UM Medical School asks all medical students to evaluate their educational experiences throughout all four years of medical school. Evaluation information, which is shared with the teachers, course directors, and curriculum leaders, is used to change and improve the educational program.

Input from students through evaluations has led to the following changes in recent years:

- a third-year Family Medicine clerkship,
- increased small group teaching,
- increased interactions and periodic meetings between the Component Directors and specific student groups,
- a revised examination calendar in Component II, to better fit with student schedules,
- alternative approaches to evaluation such as weekend take-home quizzes,
- student representation on the Introduction to the Patient committee.

Medical Student Representation on Committees

Medical students at the University of Michigan Medical School are invited and elected to participate in committees and organizations charged with varied and important responsibilities. Following are just a few of these groups.

Admissions Committee

The Admissions Committee is composed of over 70 Medical School faculty and students who participate in the evaluation of applicants to the UM Medical School. There are nine class representatives on the committee: three M2s, three M3s and three M4s. Each year three new M2s are chosen on the basis of an essay and an interview; the length of term is three years. Additional students are chosen each year to represent minority student organizations, and they also serve three-year terms. The students and faculty participate equally in interviewing applicants and voting on applicant status.



STUDENT INVOLVEMENT AND RESPONSIBILITIES

The student-friendly administration highly values and constructively uses student input to improve aspects of the Medical School."

**Samir Shah,
Medical Student**

As a representative for my class on the Curriculum Policy Committee, I have a chance to help voice student concerns regarding the educational program at Michigan. Not a meeting goes by without a faculty or administrative committee member turning to me and saying 'What do the students think about this?' It is a good feeling to believe change happens for us and with us, and not simply to us.

David Bundy, Medical Student

Class Advocates

The Medical School Student Council is composed of five class advocates from each of the Medical School classes who are elected by their classmates. Class Advocates are responsible for providing communication and problem resolution between their classmates and the School's administration (see also Medical School Student Council under Student Organizations).

Honor Council

Honor Council representatives are students elected by their classmates on the basis of personal integrity and ethical values. Two members from each class serve on the Honor Council, which often conducts the first (and sometimes only) level of investigation into allegations of unprofessional behavior, including cheating. In these cases, the Honor Council works closely with the Associate Dean for Student Programs.

Academic Review Boards

The Component, Course, and Clerkship Directors comprise the Academic Review Boards (ARB). The Boards review and take actions related to student progress in the curriculum. There are two ARBs, one in the basic science phase and one in the clinical phase. Four students who are Honor Council members serve on the Basic Science ARB, and four students who are Honor Council members serve on the Clinical ARB.

Component Committees

The Component I Committee is composed of the Course Directors of each basic science course, and the Component II Committee is composed of the Sequence Coordinators of each of the second-year sequences. Each committee has two student representatives. Discussions focus on curriculum content and quiz and exam schedules.

The Component III/IV Committee is composed of the Directors of the clinical clerkships and two student representatives each from the M3 and M4 classes (four total). Discussion focuses on issues of concern to medical students in clinical rotations such as evaluation of students, clerkship requirements, call schedules, and the clinical phase calendar.

Introduction to the Patient (ITTP) Committee

The first- and second-year classes each elect a representative to serve as a student advisor to the ITTP Course Director. The course was introduced with the new curriculum in 1992, and student input regarding improving the course and further integrating its topics with the pre-clinical curriculum is welcome.

Curriculum Policy Committee

The Curriculum Policy Committee is the highest-level curriculum committee in the Medical School and is responsible for setting curriculum policy. Each class elects one student to serve as a Curriculum Policy Committee representative (four total).

The Honor System

Students at the University of Michigan Medical School abide by an Honor Code, which all students sign before the first day of classes. The Honor Code was developed by students and faculty and has been revised, refined and passed from generation to generation to its present form:

As a member of the University of Michigan Medical School community I will:

- a. Strive to develop medical knowledge and skills to the best of my ability.*
- b. Demonstrate the highest standards of honesty and personal integrity, since these attributes are fundamental and essential to the medical profession.*
- c. Behave in a responsible and respectful manner toward patients, faculty, colleagues, health care workers and all others.*
- d. Address actions or practices on the part of a colleague that breach the principles of honor and integrity. If I am concerned with another student's behavior, I am bound by this code to contact the Honor Council or the Associate Dean for Student Programs.*

As mature adults and future physicians, students assume responsibility for ensuring that their own conduct and that of their colleagues meets the high standards as set forth in the Honor Code. Violations can be reported to the Honor Council, which is composed of students elected by their classmates on the basis of personal integrity and

ethical values. When investigating allegations of cheating, the Honor Council works closely with the Associate Dean for Student Programs. Allegations of cheating or unprofessional behavior can also be reported directly to an Associate Dean or to the Academic Review Board. Following review of the allegation, and particularly in cases where unprofessional behavior is alleged, a Hearing Committee can be convened to investigate the allegation and to recommend action as appropriate.

Being an elected student representative is a wonderful opportunity to make daily discoveries about the Medical School. Not only does it give me a chance to learn, but it also gives me a chance to be heard.

Lisa Long, Medical Student



COUNSELING AND STUDENT SUPPORT

Counseling

Two professional Counselors co-direct counseling and student support functions within the Office of Student Programs. One Counselor is assigned to M1/M3 students, and the other is assigned to M2/M4 students. These Counselors are available for personal counseling and referral, all kinds of general problem-solving assistance, and help with crisis management.

The Counselors also have administrative responsibilities. They manage quiz and exam deferrals; sit in on sessions of academic review boards, and work closely with the Associate Dean of Student Programs, Clerkship Directors, Component Directors and Sequence Directors to ensure the best possible learning experiences for our students. Counselors serve as responsive communication links between the students and the administration.

Academic Advising

The Medical School's Office of Academic Enrichment provides assistance with study skills, arranging study groups, and tutoring services for all medical students. Optional study groups are available for all first-year and second-year classes, and weekly quizzes enable students to accurately assess their level of knowledge and their need for assistance. Retired exam questions are made available to students in the Taubman Medical

Library's Reserve Reading Room and are also available on-line through the World Wide Web. A full-time academic counselor is available to all students for assistance.

Medical School faculty members stay after class to talk to students, and also provide their office phone numbers and office hours to the students. Many faculty are available via electronic mail for students who might have questions about a lecture, presentation, or discussion that occurred in one of the courses.

Career Development

First and Second Years

Career development begins in the first year of medical school and consists of presentations and a mentorship program. The Career Seminar Series, sponsored by the administration and the Medical Center Alumni Society, consists of ten noontime presentations which highlight a different medical specialty each week. A peer counseling program called "Big Sib, Little Sib" pairs students with more senior medical students.

The biggest mistake a medical student can make is to hesitate to ask for help if she or he is having problems. The Medical School administration has proven to me that they really care. You don't have to face problems alone.

Jeff Peterman, Medical Student



The UM Medical School ranks ninth among all medical schools in terms of NIH awards, and is well-known as an outstanding research institution. While the UM Medical School curriculum does not require research training, there is both encouragement and support for the many medical students who are interested in research as a valuable opportunity to explore scientific problems in depth and to understand laboratory techniques.

The Student Biomedical Research Program

With support from an NIH training grant, foundation grants and endowments, the Student Biomedical Research Program offers research experiences in the medical school basic science and faculty laboratories to undergraduate and medical students. Medical students who participate in the program often do so during the summer between the first and second years. The program offers a wide variety of experiences and some flexibility in scheduling, and a stipend is usually available to cover minimum living expenses. An annual student research forum is one highlight of this program.

This program, coordinated through the Office of Student Biomedical Research, also assists students in applying for research funding from many outside sources, including the March of Dimes, the American Heart Association, and the Hartford Foundation.

The HHMI-NIH Research Scholars Programs

The Howard Hughes Medical Institute-National Institutes of Health Research Scholars Program supports fellowships in biomedical research at the National Institutes of Health in Bethesda, Maryland. The Office of Student Biomedical Research Programs facilitates applications to this program. These very competitive fellowships are usually nine months to one year in length and are available to medical students who are in the second or third year at the time of application (December).

The HHMI Medical Student Research Training Program

The Howard Hughes Medical Institute supports one-year fellowships in biomedical research which may be taken in a research laboratory in an academic or research institution in the United States, chosen by the student applicant. The proposed research project must be described in the application; the Office of Student Biomedical Research assists students and facilitates the application process. These very competitive fellowships are usually nine months to one year in length and are available to medical students who are in the second or third year at the time of application (January).

RESEARCH OPPORTUNITIES

The faculty here bend over backwards to provide advice and career counseling to students. They are genuinely interested in students' experiences, their future careers and even their personal lives.

Jennifer Jorgensen, Medical Student

Leave of Absence for Research

A full year of research can be an excellent opportunity for certain medical students because it can provide an in-depth experience of sufficient magnitude to permit the student to become a full participant in the laboratory. Such an experience is most suitable for students with strong science backgrounds and some prior research experience. Students usually arrange such experiences themselves, either at the UM Medical School or at another institution where they have appropriate faculty contacts. A leave of absence must be requested and approved.

M.D./ Ph.D. Programs

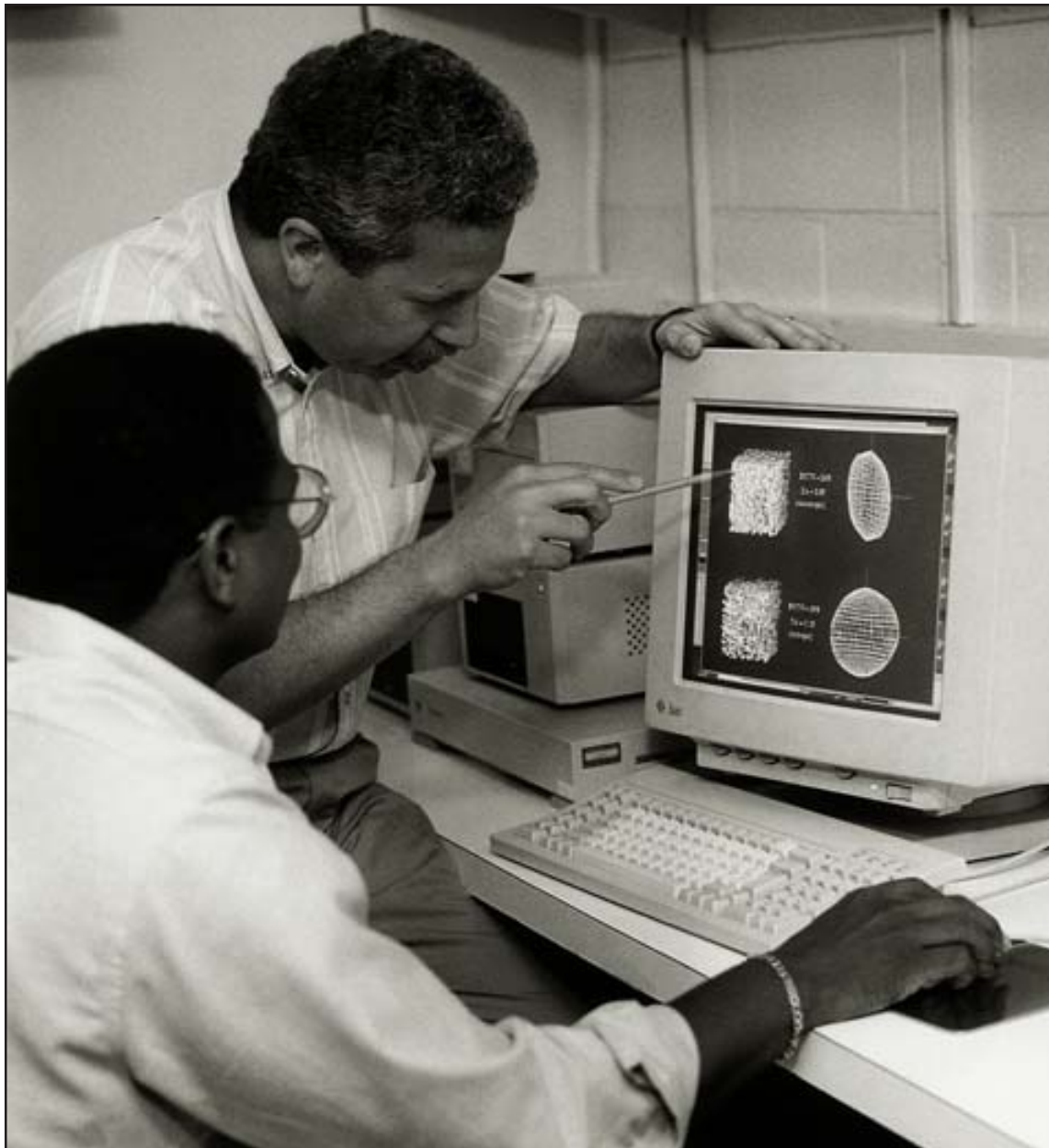
Medical students interested in combining medical studies with a doctoral degree program in one of the basic biomedical sciences are advised to discuss this interest with both the chairman of the appropriate department and the Associate Dean of Student Programs. Application is made to the selected program through the Horace H. Rackham School of Graduate Studies. Each doctoral program has its own requirements regarding admission, eligibility for candidacy, and thesis research. The biomedical doctoral programs with faculty in the Medical School are:

- Anatomy and Cell Biology
- Biomedical Engineering
- Biological Chemistry
- Biophysics
- Cellular and Molecular Biology
- Human Genetics
- Microbiology and Immunology
- Neurosciences
- Pathology
- Pharmacology
- Physiology

The Medical Scientist Training Program (MSTP)

For a complete description see page 12.





The University of Michigan Medical School has a very broad-based research environment. This means that there are a host of opportunities in both clinical and basic science research for anyone who wants to get involved. Even if you have a limited amount of time to spend in a laboratory, you can usually accomplish some research and you will certainly learn something that will help you to better understand the medical aspects of your education.

Heather Burrows, Medical Scientist Training Program,
Class of 2000

PRIMARY CARE

The University of Michigan Medical School offers outstanding and diverse experiences to students interested in primary care careers. The faculty is rich with primary care physicians who are active in patient care, teaching, advocacy, community issues and even clinical research. Every required clerkship emphasizes primary care to some degree, and all students complete a required Family Medicine clerkship. Senior medical students have a lot of flexibility in choosing a wide variety of primary care experiences on and off the UM campus.

There is great support and interest in primary care among UM medical students. They organize symposia and discussion groups to enrich their experiences at the UM Medical School, and arrange and participate in volunteer activities at UM and other local clinics.

Primary care physicians who have been exposed to the medical specialties as students are able to expertly manage the everyday health care needs of their patients, even when those needs are complex. For example, when treating a child with a kidney transplant who has presented with fever, a physician trained at the UM Medical School can make an assessment having previously seen several transplants performed, having heard lectures by top researchers in the field of transplantation, and having studied the complex management of end-stage renal disease.

In 1998, 51% of the graduating class chose primary care disciplines.



Medical student instruction takes place in facilities throughout the University of Michigan Health System. With over 30 buildings and 100 acres of land, the UM Medical Center is the world's largest one-site complex devoted to health education, research and patient care. The Medical Center classrooms, laboratories, hospitals and facilities for research serve as an on-campus focal point for preclinical and clinical instruction.

Lecture Halls

The Medical School's lecture halls have been recently renovated, making them wonderful places to learn. They now boast state-of-the-art audiovisual and computer equipment, excellent acoustics and comfortable seating.

Clinical Facilities

The University of Michigan Adult Hospital opened in 1986, making it one of the newest hospitals among the major academic medical centers. The Taubman Health Center for outpatient care also opened in 1986. Medical students rotate through the Hospitals' inpatient care units, the Taubman Health Center clinics, and UM outpatient facilities throughout of Ann Arbor. The UM East Ann Arbor Health Center, designed to accommodate

patients and medical student education, opened in 1996. Affiliations with health care systems outside the UM provide excellent facilities for inpatient and especially ambulatory experiences for UM medical students. The Oakwood Health System, a regional network with 1,100 physicians and almost 2,000 beds, offers wonderful opportunities for student experiences in outpatient settings.

The Cancer Center and Geriatrics Center facility opened in 1997. This new facility houses both outpatient clinics and clinical research space for both Centers. A new Maternal and Child Health Center opened in 1995, and a third Medical Sciences Research Building opened in 1994.

STUDENT SPACE FOR EDUCATION



The lecture halls are comfortable and feature up-to-date technology that professors often use for multi-media presentations. Our best computer resource is the CAI (computer-assisted instruction) Lab, which is available to us 24 hours a day.

Samir Gupta, Medical Student

Library

The UM's Taubman Medical Library is the seventh largest in the U.S. in the number of journal titles and ninth largest in the number of book titles. There is a computerized catalog system, and resources and equipment to conduct medical searches over the Internet. The University of Michigan is the second largest user of Medline

(the largest is the National Library of Medicine). The library is committed to making electronic resources available to users on- and off-site, and recently concluded negotiations to make over 400 health sciences titles available in electronic format. Small group study space is available in the library.



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Learning Resource Center (LRC)

The Medical School's LRC is a diverse and rich resource for medical education. In the LRC's Clinical Skills Labs medical students are introduced to patient interviews and exams during encounters with simulated patients.

There are more than 50 computers available for student use within the walls of the Learning Resource Center, and another 20 are available seven days a week, 24 hours a day in the Computer Assisted Instruction (CAI) lab. Four computer stations with a laser printer are available in the Furstenberg Student Study Center, and 19 computers are available to students throughout the main hospital complex.

The LRC also houses audiovisual programs and equipment, small group meeting and study rooms, and microscopes for student use.

Hanser Photography



Furstenberg Student Study Center

A large part of this space is dedicated to medical student use only, and is accessible to the students all hours of every day. In addition to a small computer cluster, it includes a mailbox and information area, bulletin boards for student groups, a large informal lounge and a quiet study area.

The University of Michigan has one of the most beautiful hospital complexes I've ever seen. With the addition of the new Cancer and Geriatrics Center, it's even more impressive. Inside of the hospitals, you get a better sense of all that the UM Hospitals have to offer. You really feel that not only do we have comprehensive care here, but also cutting-edge care. It's a great place to be.

Sunir Garg, Medical Student

STUDENT LIFE

Housing

Medical students, including those who are married, are eligible to live in University housing located approximately one mile from the medical center, on the University's North Campus. However, most medical students rent private apartments or stay in one of several medical fraternities, located near the medical campus and most of which are on bus routes and within a 5-15 minute walk to the medical center.

For more detailed information on housing, contact:

University of Michigan
Office of University Housing
1011 Student Activities Building
Ann Arbor, Michigan 48109-1316
<http://www.housing.umich.edu>

Transportation and Parking

Medical students have a variety of free and low-cost options for travel by bus. University buses run several regular routes looping through campus from 6:45 a.m. to 7 p.m. The *Nite Owl* bus service, with more limited routes, runs from 7 p.m. to 2 a.m. September through April. Finally, *Ride Home* is available from 2 a.m. to 7 a.m. There are other low-cost popular transportation programs that serve students in and around the medical center areas.

The Office of Parking Operations coordinates and issues parking information to all UM students, and recently coordinated increased options for clinical students. However, parking options are few for medical students at or near the medical campus; walking, buses and biking are better options.

Sports and Recreation

There are several indoor sports and recreation buildings and outdoor playing fields throughout the University of Michigan campus that are available at no charge to all registered students. The recreation buildings house swimming pools, running tracks, exercise and fitness rooms with a wide variety of machines, lockers and shower facilities, gymnasiums for basketball, volleyball and badminton, weight rooms, courts for racquetball, handball, paddle ball and squash, and saunas. Outdoor play fields include courts for basketball, tennis and sand volleyball, running tracks, fields for softball, soccer, rugby, cricket and football, picnic areas and a horseshoe pit.

Intramural teams organized by medical students compete across campus with students from other UM schools. Currently, medical students participate in a variety of sports, including soccer and basketball.

Medical students are also eligible to purchase season tickets to varsity sports events.

The UM Medical School atmosphere is a lot more friendly and non-competitive than I thought it would be.

Mary Ferris,
Medical Student



Safety

Students feel relatively safe in Ann Arbor, which is a low-crime community.

Medical students are provided with information regarding crime statistics and campus safety programs and services when they enter and throughout all four years of medical school. Clinical students are provided with an overview of hospital

security, in particular, during orientation for the M3 year.

Emergency telephones are strategically located around the entire campus. The After Dark Safety Program provides medical students with free taxi service before dawn and after dusk. Students can call for an escort from libraries, parking lots, and other sites.



The friendships I have made with other medical students have had a very positive impact on my four years here. Initially, I was somewhat wary of my classmates, having heard that the University of Michigan Medical School was

full of homogeneous “gunners.” I soon found out otherwise. My class has students in their thirties and forties, some students who are parents, and some who are gay, lesbian or bisexual. I feel lucky to be in medical school with many warm, kind and open individuals.

Beth Barclay, Medical Student

STUDENT ORGANIZATIONS

Students are very involved. We work in community clinics and we organize seminars, conferences, workshops, health fairs and more. The opportunity to participate in these community projects gives us a more complete medical education.

Miguel Suarez Benet, Medical Student

Medical students at the University of Michigan are very active outside the classrooms, hospitals and clinics. They gather in formal and informal groups to engage in a wide variety of activities that greatly benefit residents of the community. UM medical student groups create and participate in educational programs and engage in activities to support specific groups such as women, children, gays, lesbians, minority students and Christians, and to address specific social problems such as substance abuse, domestic violence and smoking among teenagers.

Medical School Student Council

Five Student Advocates from each of the Medical School classes are elected to work with the student body and the administration to address issues such as library hours, parking, classroom renovations, residency interviewing, financial aid budgets and curriculum concerns. Recent programs introduced by the Student Council include pagers for students to facilitate learning in the hospital or the clinic and an advocacy group for nontraditional students. In addition to organizing class outings such as bowling, whirley-ball, and ice-skating, Student Advocates have been working with the administration to improve medical student well-being.

American Medical Association — Medical Student Section

This organization seeks to address social, political and personal issues that affect medical school students, provide a transition into life as a physician, and provide service to the community. Members are encouraged to become politically active by getting involved with the AMA on a national level.

American Medical Student Association (AMSA)

With almost 30,000 members nationally, AMSA is the largest independent organization of medical students in the country. AMSA membership gives medical students the opportunity to be involved in the Ann Arbor and medical school communities through participation in many projects and programs.

American Medical Women's Association (AMWA)

AMWA strives to provide a supportive environment for women seeking a career in medicine and to educate the university medical community about women's health issues.

Black Medical Association (BMA)

The Black Medical Association is committed to addressing the academic and social needs of African American medical students. The BMA traditionally provides its members with the opportunity to interact with minority students and faculty from the preclinical, clinical and post-doctoral levels of medical education. Likewise, BMA members are often exposed to medical issues specific to African Americans through involvement with various community outreach programs.

Christian Medical/Dental Society

The Christian Medical/Dental Society is a group of medical and dental students committed to knowing, loving, and serving Jesus Christ. The members make up a support group for students trying to live for God while attending medical and dental school.

Doctors Ought To Care (DOC)

Doctors Ought to Care (DOC) is an organization composed of medical students and physicians who seek to reverse the rising trend of smoking in children and teenagers by reaching out to these children with interactive and informative presentations about the dangers of tobacco use.

DOC hopes to broaden its program soon to include presentations on issues such as alcohol use and body image/eating disorders in teenagers.

Galens Medical Society

The Galens Medical Society has been a tradition at the UM Medical School for more than 75 years. Comprising about 125 medical students and faculty members, the Galens Society participates in and hosts many activities focused on the welfare of children of all ages in the Washtenaw County area. A major Galens activity is the Tag Days Bucket Drive during the first weekend in December. Members stand on the street corners of Ann Arbor and collect more than \$65,000 in charitable donations. These funds are then allocated to a variety of children's charities in Washtenaw county with a special focus on start-up funding for new children's groups.

Jewish Medical Student Association

JeMSA is an informal group providing social opportunities for Jewish medical students (or anyone else who is interested), as well as a forum for discussing issues related to Judaism in medicine, such as Jewish medical ethics. Activities include veggie potluck dinners, sponsorship of speakers, participation in cultural festivals, and holiday celebrations, including an annual Hanukkah party.



The support and encouragement students give to each other provide a setting where one can learn about medicine in a warm and friendly environment.

Miguel Suarez Benet, Medical Student



Latin American / Native American Medical Association (LANAMA)

The Latin American Native American Medical Association is a group of medical students with similar backgrounds who have come together to get to know and help each other through their medical careers. One goal of the group is to increase minority enrollment and interest at the Medical School.

Lesbian, Gay and Bisexual People in Medicine (LGBPM)

LGBPM promotes the health of lesbians, gays, and bisexuals via the education of health care professionals in the care needs of this population. Members encourage compassion, respect and understanding, encourage the adoption of healthful life-styles among members, promote the acceptance of lesbian, gay, and bisexual physicians, and support anti-discrimination measures which will enable lesbian, gays, and bisexuals to practice medicine for the benefit of society.

Medical Fraternities

Nu Sigma Nu, Phi Chi and Phi Rho offer housing alternatives near the medical campus for medical students. They also provide students with a great opportunity to meet others who are further along in their medical training. Nu Sigma Nu is an all-male fraternity, and Phi Chi and Phi Rho offer co-ed housing.

Medstart

Medstart was founded in 1991 by a group of medical students interested in the needs of underprivileged children. Today, Medstart is a coalition of medical, nursing, dental, law, social work, public health, education, and public policy students working together to make a difference. The goal is to educate future health care providers, child advocates, and the community about the issues facing children. Each year, Medstart sponsors a major national conference.

Medical Students for Choice

Medical Students for Choice is part of a national network of medical students who are concerned about issues related to women's reproductive health. The mission of this group is to increase student awareness of reproductive health options. By working with the administration, they seek to increase course content related to reproductive health, to organize events for exploring values and to present factual information about abortion and reproductive health. They also provide opportunities for students to visit clinics where abortions are performed and inform students of relevant issues emerging on local, regional and national levels.

Phi Delta Epsilon

Phi Delta Epsilon is an international coeducational medical fraternity founded at Cornell Medical College in 1904. It is a philanthropic and social fraternity. Members are proud of their

community service, whether it is donating clothes to a homeless shelter, helping the local Ronald McDonald House, organizing a fund raiser, or dressing up as clowns for a children's hospital carnival.

Physicians for Social Responsibility (PSR)

University of Michigan Physicians for Social Responsibility is part of a national organization of physicians and other health professionals. National PSR was started in the 1960s for physicians to take a stand against nuclear proliferation, but now takes a broader look at physicians' roles in preventing violence, including dealing with poverty and environmental pollution. The goals are to educate colleagues, other health professionals, and the community at large, and to give people a chance to work at the grassroots level on these issues.

United Asian American Medical Student Association (UAAMSA)

The goals of the UAAMSA are to provide a support network for Asian American medical students and build a sense of community, to serve as a voice for Asian Americans within the medical school, to return to and enhance surrounding communities through service, and to raise awareness of general and health care issues pertaining to Asian Americans.



STUDENT HEALTH AND WELL-BEING

Medical Student Well-Being Program

In response to student interest, the Medical Student Well-Being Program was created in 1996. The goal of this program is to acknowledge that the pursuit of medicine is at times stressful and to emphasize to students the importance of maintaining a balance between academic studies and personal well-being. There is a "Big Sib/Little Sib" mentorship program to provide incoming students with a more personal introduction to the UM Medical School. Other highlights include:

- A joint effort by the students and the administration to revamp the new student orientation to include a more dynamic introduction to UM Medical School, including a Challenge Ropes course (see photo), involvement in community service and a White Coat Matriculation Ceremony,
- Designation of a Student Well-being room in the Furstenberg Student Study Center where materials on various programs are available and where students can meet,
- A designated month to celebrate healthy life-styles, with featured guests speaking on topics such as "A Lifetime of Healthy Living,"
- A Cultural Diversity Holiday Celebration,
- "Wellness Wednesdays" initiated by the American Medical Women's Association to feature special programs and/or

speakers focusing on nutrition, exercise, stress reduction, and balancing medical school demands with family needs,

- Announcements to students about medical school, hospital, campus and community activities on topics related to health living and well-being,
- A "Post Boards" Picnic for second-year students after the USMLE Step 1 exam, sponsored by the administration and the Medical Center Alumni Society.

Immunizations

Students accepted into the University of Michigan Medical School must provide written documentation of certain immunizations or proof of immunity (e.g., dates of vaccinations or positive antibody titres) in order to complete the registration process and begin classes.

University Health Service

The University Health Service offers comprehensive outpatient medical services to students. Health concerns can be addressed in one of four medical clinics or the Nurse Clinic. Other special health care needs may be met by clinicians in the Gynecology Clinic, the Allergy and Immunization Clinic, the Eye Care Clinic and Optical Shop and the Nutrition Clinic. Most services provided by the University Health Service that are not covered by students' private health insurance will be covered by the Health Service fee.



First-year medical students on the University's Challenge Ropes Course.

Students' spouses, significant others, dependents over 14 years of age, non-enrolled students, and former students (who were enrolled within the past six years) may use the Health Service on the same basis as enrolled students; there are several payment options.

Mental Health Services

The Medical Student Mental Health Consultation Service provides medical students with prompt psychiatric evaluation, brief treatment, and assistance in finding additional treatment resources if necessary. All contacts with the program are confidential.

Health Insurance

Prior to registration, all medical students must have health care insurance coverage through the UM's GradCare health insurance program or comparable insurance coverage from another provider.

GradCare is a comprehensive health insurance program that includes coverage for office visits, emergency services, inpatient care, and other medical benefits. Premiums can be included in the Medical School Financial Aid budget through funds from external loan sources by submitting a request to the Financial Aid Office.

Disability Insurance

The UM Medical School is one of the few medical schools that pays for its students to be enrolled in a disability plan. This plan pays a monthly benefit in the event of disability, and also provides important options upon graduation from medical school. There are some restrictions on pre-existing disabilities and the type of disability.



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 Thomas, Pamela Marie, MD, Assistant Professor
 Tindall, Shauna, PhD, Clinical Assistant Professor
 Tsai, Wan Chong, MD, Lecturer
 Vazquez, Delia M., MD, Assistant Professor
 Wechsler, Daniel S., MD/PhD, Assistant Professor
 Wechsler, Stephanie Burns, MD, Assistant Professor
 Weiner, Allan D., MD, Clinical Instructor
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Department of Pharmacology

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 Bittner, Mary Ann, PhD, Assistant Research Scientist
 Domino, Edward F., MD, Professor
 Fisher, Stephen K., PhD, Professor
 Gnegy, Margaret E., PhD, Professor
 Holz, Ronald W., MD/PhD, Professor
 Isom, Lori L., PhD, Assistant Professor
 Kent, Ute M., PhD, Research Investigator
 Kilgore, Kenneth S., PhD, Assistant Research Scientist
 Levy, Gerald N., PhD, Senior Associate Research Scientist

Lucchesi, Benedict R., MD/PhD, Professor
 Mancini, William R., PhD, Assistant Professor and Research Investigator
 Maybaum, Jonathan, PhD, Professor
 Neubig, Richard Robert, MD/PhD, Professor
 Osawa, Yoichi, PhD, Assistant Professor
 Pratt, William B., MD, Professor
 Remmers, Ann E., PhD, Research Investigator
 Shewach, Donna S., PhD, Associate Professor
 Schlafer, Marshal, PhD, Professor
 Simpson, Robert U., PhD, Professor
 Smith, Charles B., MD/PhD, Professor
 Traynor, John R., PhD, Senior Associate Research Scientist
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 Woods, James H., PhD, Professor

Department of Physical Medicine and Rehabilitation

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 Forman, Glenn M., MD, Clinical Instructor
 Geisser, Michael E., PhD, Assistant Professor
 Haig, Andrew J., MD, Assistant Professor
 Herring, Gioia Marie, MD, Clinical Instructor
 Hurvitz, Edward A., MD, Assistant Professor
 Kewman, Donald G., PhD, Clinical Professor
 Kirsch, Ned L., PhD, Clinical Assistant Professor
 Lee, Laura W., MD, Clinical Instructor
 Levine, Simon P., PhD, Associate Professor
 McDowell, Sharon K., MD, Lecturer
 Nelson, Virginia S., MD, Clinical Associate Professor
 Nobunaga, Austin I., MD, Clinical Assistant Professor
 Perez, Alejandro, MD, Lecturer
 Richardson, James K., MD, Assistant Professor
 Roberts-Atwater, Beverly, PhD/OHRD, Clinical Instructor
 Rowan, James M., PhD, Lecturer
 Schmitt, Susan C., MD, Lecturer
 Schultz, John S., MD, Clinical Assistant Professor
 Spires, Mary Catherine, MD, Clinical Assistant Professor
 Tate, Denise G., PhD, Associate Professor
 Wallbom, Agnes S., MD, Clinical Instructor
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 Werner, Robert A., MD, Associate Professor
 Wirth, Nancy E., MD, Lecturer

Department of Physiology

Williams, John Andrew, MD/PhD, Chair and Professor

Argetsinger, Lawrence S., PhD, Assistant Research Scientist
 Carter-Su, Christin, PhD, Professor
 D'Alecy, Louis G., PhD, Professor
 Dawson, David C., PhD, Professor
 Faulkner, John A., PhD, Professor
 Herzog, Susan Brooks, PhD, Assistant Professor
 Karsch, Fred J., PhD, Professor
 Keyes, P. Landis, PhD, Professor
 Logsdon, Craig D., PhD, Professor
 MacDougald, Ormond A., PhD, Assistant Professor
 McReynolds, John S., MD, Professor
 Metzger, Joseph Mark, PhD, Associate Professor
 Moises, Hyman C., PhD, Professor
 Richey, Joyce M., PhD, Assistant Research Scientist
 Samuelson, Linda C., PhD, Associate Professor
 Schwartz, Jessica, PhD, Professor
 Sherman, James H., PhD, Associate Professor
 Stuenkel, Edward L., PhD, Associate Professor
 Webb, R. Clinton, PhD, Professor
 Westfall, Margaret V., PhD, Assistant Research Scientist

Department of Psychiatry

Greden, John F., MD, Chair and Professor

Abelson, James L., MD/PhD, Associate Professor
 Adams, Kenneth, PhD, Professor
 Agranoff, Bernard W., MD, Professor and Senior Research Scientist
 Akil, Huda, PhD, Professor
 Albucho, Ronald C., MD, Clinical Assistant Professor
 Aldridge, Andrew M., MD, Clinical Instructor
 Alessi, Norman E., MD, Associate Professor
 Amdur, Richard L., PhD, Clinical Assistant Professor
 Ballester, Christina B., MD, Clinical Instructor
 Barry, Kristen L., PhD, Senior Associate Research Scientist
 Berent, Stanley, PhD, Professor
 Bieliauskas, Linas A., PhD, Associate Professor
 Blos, Peter, MD, Lecturer
 Blow, Frederic C., PhD, Assistant Professor and Assistant Research Scientist
 Brower, Kirk J., MD, Associate Professor
 Buchtel, Henry A., PhD, Associate Professor
 Burmeister, Margit, PhD, Associate Professor
 Cameron, Oliver G., MD/PhD, Professor
 Carli, Thomas, MD, Clinical Associate Professor
 Carnahan, Jane M., MD, Clinical Instructor
 Chamberlain, Kenneth R., MD, Instructor
 Closser, Mary H., OHRD, Clinical Assistant Professor

Dalack, Gregory W., MD, Assistant Professor
 Davies, Douglas David, PhD, Lecturer
 De Quardo, John R., MD, Assistant Professor
 Dillon, James E., MD, Clinical Assistant Professor
 Eiser, Alan S., PhD, Lecturer
 Falit, Harvey H., MD, Lecturer
 Florence, Timothy D., MD, Clinical Instructor
 Fluent, Thomas E., MD, Clinical Assistant Professor
 Gay, Tamara L., MD, Clinical Assistant Professor
 Ghaziuddin, Mohammad, MD, Assistant Professor
 Ghaziuddin, Neera, MD, Assistant Professor
 Giordani, Bruno J., PhD, Associate Professor
 Glick, Rachel Lipson, MD, Clinical Assistant Professor
 Goldman, Mona L., PhD, Research Investigator
 Guyer, Melvin J., PhD, Professor
 Hanna, Gregory Lynn, MD, Associate Professor
 Healy, Daniel J., MD, Lecturer
 Hegedus, Andrea M., PhD, Assistant Research Scientist
 Huang, Milton P., MD, Lecturer
 Jibson, Michael D., MD/PhD, Clinical Assistant Professor
 Kales, Helen Christine, MD, Lecturer
 Kalter, Neil M., PhD, Professor
 Kamholz, Barbara A., MD, Clinical Assistant Professor
 Kerber, Kevin B., MD, Clinical Assistant Professor
 King, Cheryl A., PhD, Associate Professor
 Kloss, Raymond J., MD, Clinical Instructor
 Knesper, David J., MD, Associate Professor
 Korszun, Anna-Krysty Krystyna, MD/DDS/PhD, Assistant Professor
 Kroll, Phillip D., MD, Assistant Professor
 Kronfol, Ziad A., MD, Associate Professor
 Liberzon, Israel, MD, Assistant Professor
 Lindsay, Robert K., PhD, Senior Research Scientist
 Litow, Katherine W., MD, Clinical Instructor
 Little, Karley Y., MD, Associate Professor
 Lohr, Naomi E., PhD, Assistant Professor
 Lopez, Juan F., MD, Assistant Professor
 Mahapatra, Srinibas, MD, Clinical Assistant Professor
 Maixner, Daniel F., MD, Clinical Instructor
 Marcus, Sheila M., MD, Clinical Assistant Professor
 Meador-Woodruff, James H., MD, Associate Professor
 Mellow, Alan M., MD/PhD, Associate Professor
 Milner, Karen K., MD, Clinical Assistant Professor
 Neal, David Lee, Masters, Assistant Professor
 Nesse, Randolph M., MD, Professor
 Nitzberg, Laura Jean, Masters, Lecturer
 Olson, Eva D., MD, Clinical Assistant Professor
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 Pomerleau, Ovide F., PhD, Professor
 Pomerleau, Cynthia S., PhD, Senior Associate Research Scientist

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 Taylor, Stephan F., MD, Assistant Professor
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 Tsai, Luke Y., MD, Professor
 Ueda, Tetsufumi, PhD, Professor
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 Watson, Stanley J., MD/PhD, Professor
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 Zucker, Robert A., PhD, Professor

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 Lam, Kwok Leung, PhD, Assistant Professor
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 Martel, Mary K., PhD, Associate Professor
 McGinn, Cornelius John, MD, Assistant Professor
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 McShan, Daniel L., PhD, Professor
 Pierce, Lori Jo, MD, Associate Professor
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 Bowerman, Richard A., MD, Associate Professor
 Bree, Robert L., MD, Professor
 Bude, Ronald O., MD, Associate Professor
 Carson, Paul L., PhD, Professor
 Cascade, Philip N., MD, Associate Professor
 Chan, Heang-Ping, PhD, Professor
 Chenevert, Thomas L., PhD, Associate Professor
 Cho, Kyung J., MD, Professor
 Cohan, Richard Harris, MD, Professor
 Delaney-Sathy, Lydia O., MD, Lecturer
 Deveikis, John Peter, MD, Clinical Associate Professor
 Dipietro, Michael A., MD, Professor
 Eldevik, Odd Petter, MD/PhD, Clinical Associate Professor
 Ellis, James H., MD, Professor
 Fessell, David P., MD, Clinical Assistant Professor
 Fowlkes, J. Brian, PhD, Assistant Research Scientist
 Francis, Isaac R., OHRD, Professor
 Gebarski, Stephen S., MD, Professor
 Goodsitt, Mitchell M., PhD, Associate Professor
 Gross, Barry H., MD, Professor
 Hansen, Ronnell A., MD, Lecturer
 Hayes, Curtis W., MD, Professor
 Helvie, Mark A., MD, Associate Professor
 Hernandez, Ramiro J., MD, Professor
 Hertzberg, Todd M., MD, Lecturer
 Hyde-Hoff, Donna L., MD, Lecturer
 Jacobson, Jon A., MD, Clinical Assistant Professor
 Jamadar, David A., MD, Clinical Assistant Professor
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 Kim, Boklye, PhD, Assistant Research Scientist
 Korobkin, Melvyn T., MD, Professor
 Kuhns, Lawrence R., MD, Professor
 Lawless, Gordon T., MD, Lecturer
 Lin, John, MD, Clinical Assistant Professor
 Longino, Marc Alan, PhD, Research Investigator
 Marn, Charles S., MD, Associate Professor
 Marshall, Kelley W., MD, Clinical Assistant Professor
 Marx, Mary V., MD, Associate Professor
 Meyer, Charles R., PhD, Professor
 Miller, J. Thomas, MD, Clinical Assistant Professor
 Miller, Douglas L., PhD, Senior Research Scientist
 Neimatallah, Mohammed A., MD, Lecturer
 Paramagul, Chintana, MD, Clinical Assistant Professor

Patel, Dakshesh S., MD, Lecturer
 Patterson, Stephanie K., MD, Clinical Assistant Professor
 Pernicano, Perry G., MD, Clinical Assistant Professor
 Petrick, Nicholas A., PhD, Assistant Research Scientist
 Platt, Joel F., MD, Associate Professor
 Prince, Martin R., MD/PhD, Assistant Professor
 Quinn, Timothy J., MD, Lecturer
 Quint, Leslie Eisenbud, MD, Professor
 Quint, Douglas J., MD, Associate Professor
 Rockwell, David T., MD, Lecturer
 Ross, Brian Dale, PhD, Associate Professor
 Roubidoux, Marilyn A., MD, Associate Professor
 Rubin, Jonathan M., MD/PhD, Professor
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 Silver, Dorit Adler, MD, Associate Professor
 Silver, Terry M., MD, Professor
 Sonda, Paul L., MD, Clinical Assistant Professor
 Song, Julie H., MD, Lecturer
 Strouse, Peter J., MD, Assistant Professor
 Swanson, Scott D., PhD, Assistant Research Scientist
 Varma, Manish K., MD, Lecturer
 Weadock, William J., MD, Lecturer
 Weichert, Jamey Paul, PhD, Senior Associate Research Scientist
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 Wilson, Todd E., MD, Assistant Professor
 Wong, Jeffrey H., MD, Lecturer

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 Austin, Edward, MD, Clinical Assistant Professor
 Barach, Eric M., MD, Clinical Instructor
 Barsan, William G., MD, Professor
 Bartlett, Robert Hawes, MD, Professor
 Beer, David George, PhD, Associate Professor
 Belville, William D., MD, Associate Professor
 Biermann, Janet Sybil, MD, Assistant Professor
 Bishop, Dennis Keith, PhD, Associate Professor
 Bloom, David A., MD, Professor
 Boczar, Michael E., OHRD, Clinical Assistant Professor
 Bolling, Steven F., MD, Professor
 Bove, Edward L., MD, Professor
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 Burney, Richard E., MD, Professor

Campbell, Darrell A., MD, Professor
 Carolyn, Kathryn A., MD, Lecturer
 Carpenter, James E., MD, Associate Professor
 Cederna, Paul S., MD, Lecturer
 Chandler, William F., MD, Professor
 Chang, Alfred E., MD, Professor
 Chudnofsky, Carl Richard, MD, Assistant Professor
 Chung, Kevin C., MD, Assistant Professor
 Cimmino, Vincent M., MD, Clinical Associate Professor
 Colletti, Lisa M., MD, Associate Professor
 Colone, Pino D., MD, Clinical Instructor
 Coran, Arnold G., MD, Professor
 Corpron, Cynthia A., MD, Lecturer
 Craig, Kathryn A., MD, Lecturer
 Day, Mark L., PhD, Assistant Professor
 Dedrick, Dale K., MD, Assistant Professor
 Deeb, G. Michael, MD, Professor
 Deegan, Thomas John, MD, Clinical Instructor
 Desmond, Jeffrey S., MD, Lecturer
 Dries, David J., MD, Professor
 Dronen, Steven C., MD, Associate Professor
 East, Mary Kub, MD, Instructor
 Eckhauser, Frederic E., MD, Professor
 Ennis, Steven R., PhD, Assistant Research Scientist
 Evans, Rawden W., MD/PhD, Lecturer
 Faerber, Gary J., MD, Assistant Professor
 Farley, Frances A., MD, Assistant Professor
 Freer, James A., MD, Clinical Assistant Professor
 Freiberg, Andrew A., MD, Assistant Professor
 Gantz, Ira, MD, Associate Professor
 Garner, Warren L., MD, Associate Professor
 Geiger, James D., MD, Assistant Professor
 Gilmont, Robert R., PhD, Research Investigator
 Goh, Keow Mei, MD, Lecturer
 Goldstein, Steven A., PhD, Professor
 Golladay, Eustace S., MD, Clinical Professor
 Gomez, Hernan F., MD, Clinical Instructor
 Gordon, James A., MD, Lecturer
 Goulet, James A., MD, Associate Professor
 Graham, Linda M., MD, Professor
 Graziano, Gregory P., MD, Associate Professor
 Greenfield, Jonathan I., MD, Clinical Assistant Professor
 Haghighat, Shaghayegh H., MD, Clinical Instructor
 Hak, David J., MD, Assistant Professor
 Hallinen, Diane L., MD, Clinical Instructor
 Harmon, Carroll M., MD/PhD, Assistant Professor
 Hawn, Mary T., MD, Assistant Professor
 Hensinger, Robert N., MD, Professor
 Hinshaw, Daniel B., MD, Associate Professor
 Hirschl, Ronald B., MD, Associate Professor
 Hoff, Julian T., MD, Professor

Hollister, Scott J., PhD, Associate Professor
 Huang, Shaun Su, MD, Clinical Instructor
 Iannetoni, Mark D., MD, Assistant Professor
 Jacobs, Lloyd A., MD, Professor
 Jaggi, Franz M., OHRD, Clinical Instructor
 Jebson, Peter J. L., MD, Assistant Professor
 Keep, Richard F., PhD, Senior Associate Research Scientist
 King, Jeffrey C., MD, Clinical Assistant Professor
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 Kish, Phillip E., PhD, Assistant Research Scientist
 Knol, James A., MD, Associate Professor
 Konnak, John W., MD, Professor
 Koo, Harry P., MD, Assistant Professor
 Kronick, Steven, MD, Lecturer
 Kuhn, John E., MD, Assistant Professor
 Kuzon, William Michael, MD/PhD, Associate Professor
 Kwa, Hian, MD, Lecturer
 Lee, Jason H., MD, Clinical Instructor
 Lelli, Joseph L., MD, Clinical Assistant Professor
 Li, Qiao, PhD, Research Investigator
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 Lowell, Mark J., MD, Lecturer
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 Moalli, Maria R., DVM, Research Investigator
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 Mulay, James J., PhD, Professor
 Mulholland, Michael W., MD/PhD, Professor
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 Muraszko, Karin M., MD, Associate Professor
 Neacy, Kathleen A., MD, Lecturer
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 Nyachowe, Pascal, MD, Clinical Instructor
 Nypaver, Michele M., MD, Clinical Assistant Professor
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 Ohl, Dana Alan, MD, Associate Professor
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 Polley, Theodore Z., MD, Clinical Associate Professor
 Punch, Jeffrey D., MD, Assistant Professor
 Ramnath, Suresh, MD, Clinical Instructor
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 Rees, Riley S., MD, Professor
 Reickert, Craig A., MD, Lecturer
 Roebuck, Michael D., MD, Clinical Instructor
 Ropp, Leland J., MD, Clinical Assistant Professor
 Ross, Donald A., MD, Associate Professor
 Sagher, Oren, MD, Assistant Professor
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 Schultz, Carol Hoiby, MD, Lecturer
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 Scott, Phillip Alton, MD, Lecturer
 Silbergleit, Robert, MD, Lecturer
 Simeone, Diane M., MD, Assistant Professor
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 Smith, Howard Gary, MD, Clinical Instructor
 Sondak, Vernon K., MD, Associate Professor
 Sonnad, Seema S., PhD, Assistant Professor
 Soriano, Jose A., MD, Clinical Instructor
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 Sung, Randall S., MD, Lecturer
 Swaniker, Fresca C., MD, Lecturer
 Sweeney, John F., MD, Assistant Professor
 Swisher, Stephen A., MD, Lecturer
 Taheri, Paul A., MD, Assistant Professor
 Teitelbaum, Daniel H., MD, Assistant Professor
 Thompson, Norman W., MD, Professor
 Treloar, David J., MD, Clinical Assistant Professor
 Turcotte, Jeremiah G., MD, Professor
 Urbanchek, Melanie G., PhD, Research Investigator
 Van Der Meulen, Jacob H., PhD, Research Investigator
 Vander Have, Kenneth R., MD, Clinical Instructor
 Venes, Joan L., MD, Professor
 Von Lubitz, Dag K., PhD, Assistant Professor
 Wahl, Wendy L., MD, Clinical Assistant Professor
 Wakefield, Thomas W., MD, Professor
 Walton, Edward A., MD, Clinical Instructor
 Wang, Stewart C., MD/PhD, Assistant Professor
 Wang, Xu, MD, Research Investigator
 Weber, James E., OHRD, Clinical Assistant Professor
 Wilkerson, Catherine E., MD, Clinical Instructor

Wilkerson, Mark D., MD, Clinical Instructor
 Wilkerson, William M., MD, Clinical Assistant Professor
 Wilkins, Edwin G., MD, Associate Professor
 Wojtys, Edward M., MD, Professor
 Wolf, J. Stuart, MD, Assistant Professor
 Xi, Guohua, MD, Research Investigator
 Yahanda, Alan M., MD, Assistant Professor
 Yang, Guoyuan, MD/PhD, Assistant Research Scientist
 Yang, Ying-Kui, MD/PhD, Research Investigator
 Younger, John G., MD, Lecturer
 Zahos, Peter A., MD, Clinical Instructor
 Zelenock, Gerald B., MD, Professor
 Zink, Brian J., MD, Associate Professor

Academic Calendar

FIRST YEAR

(Weekly Quizzes Monday a.m.)

Orientation & Registration Begin	Thursday, 8/16/01
Classes Begin	Tuesday, 8/21/01
Labor Day (Holiday)	Monday 9/3/01
Examination/Study Period	Saturday-Saturday, 10/13-10/20/01
Thanksgiving (Holiday)	Thursday-Sunday, 11/22-11/25/01
Term Ends	Saturday, 12/22/01
Winter Break	Sunday-Sunday, 12/23/01-1/06/02
Classes Begin	Monday, 1/07/02
Martin Luther King Jr. Birthday	Monday, 1/21/02
(University Symposia, no regular classes)	
Examination/Study Period	Saturday-Saturday, 2/16-2/23/02
Spring Break	Sunday-Sunday, 2/14-3/03/02
Classes Resume	Monday, 3/04/02
Term Ends	Friday, 5/24/02

SECOND YEAR

(Weekly Quizzes Monday a.m.)

Registration	Monday, 8/20/01
Classes Begin	Monday, 8/20/01
Labor Day (Holiday)	Monday, 9/3/01
Thanksgiving (Holiday)	Thursday-Sunday, 11/22-11/25/01
Classes/Exam End	Saturday, 12/22/01
Winter Break	Sunday-Sunday, 12/23/01-1/06/02
Classes Begin	Monday, 1/07/02
Martin Luther King Jr. Birthday	Monday, 1/21/02
(University Symposia, no regular classes)	
Spring Break	Saturday-Sunday, 2/23-3/3/02
Classes Resume	Monday, 3/4/02
Classes/Exams End	Monday 5/13/02
Study Days Begin	Tuesday, 5/14/02
Academic Year Ends	Thursday, 6/21/02

MEDICAL SCHOOL ACADEMIC AND CLINICAL CALENDARS 2001-2002

These calendars subject to change by action of the Medical School

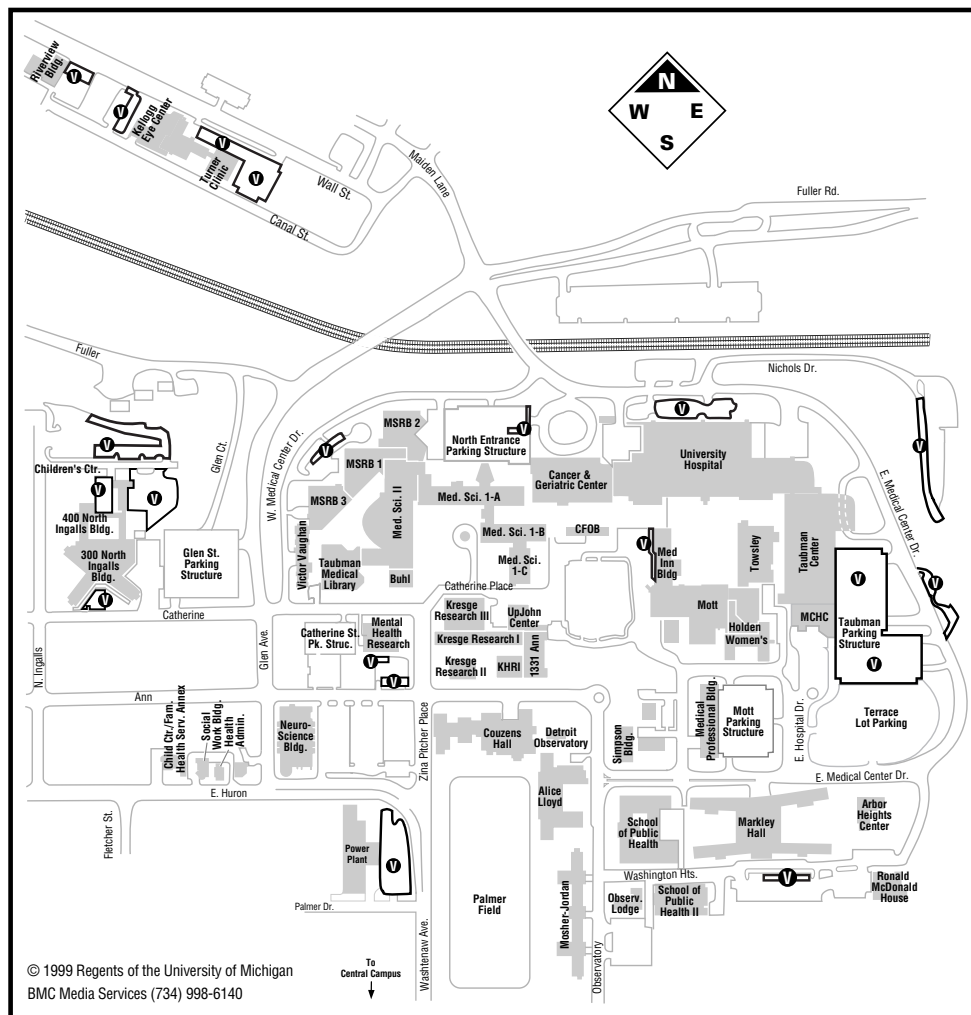
Clinical Calendar

PERIODS	4-8-12 WEEK EXPERIENCES	6-WEEK EXPERIENCES (Pediatrics & Obstetrics/Gynecology)
1	7/2-7/29/01	7/2-8/12/01
2	7/30-8/26/01	8/13-9/23/01
3	8/27-9/23/01	
4	9/24-10/21/01	9/24-11/4/01
5	10/22-11/18/01	11/5-12/16/01
6	11/19-12/16/01	
vacation	12/17/01-1/6/02	
7	1/7-2/3/02	
8	2/4-3/3/02	2/18-3/31/02
9	3/4-3/3/02	
vacation	4/1-4/7/02	vacation
10	4/8-5/02	4/8-5/19/02
11	5/6/-6/2/02	5/20—6/30/02
12	6/3-6/30/02	

- Weekends that occur during a clerkship may be scheduled by the department.
- Some clerkships have overnight call.
- Scheduled vacations begin with the end of responsibilities on Sunday, and end with the beginning of responsibilities on Monday morning.
- Official holidays for medical students are Labor Day, Thanksgiving weekend (Thursday through Sunday), Martin Luther King Day, Memorial Day, and Independence Day. Because of the level of increased patient care responsibilities on subinternship experiences, the student's responsibilities may take precedence over holiday time. Students on subinternships must discuss any time off with the attending staff.

- * Senior Year ends Period 11, June 2, 2000.
- Graduation will be on Friday, June 9, 2000.

University of Michigan Medical Campus



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Admissions Office and/or Committee
4130 Medical Science I, C-Wing
1301 Catherine Street
Ann Arbor, MI 48109-0611
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4130 Medical Science I, C-Wing
1301 Catherine Street
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University of Michigan Medical School
Office of Student & Minority Affairs
5113 Medical Science I, C-Wing
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Ann Arbor, MI 48109-0611
(734) 764-8185

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Office of University Housing
1011 Student Activities Building
Ann Arbor, MI 48109-1316
(734) 763-3164

Medical Scientist Training Program
1301 Catherine Street
M7310 Medical Science I
Ann Arbor, MI 48109-0624
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For other doctoral programs:

University of Michigan
Rackham School of Graduate Studies
915 E. Washington
Ann Arbor, MI 48109-1070
(734) 764-8129

For information on Public Health graduate programs:

University of Michigan
School of Public Health
Academic Affairs
109 Observatory
Ann Arbor, MI 48109-2029
(734) 764-5425

For residency questions:

University of Michigan
Residency Office
1514 LSA
Ann Arbor, MI 48109-1382
(734) 764-1400

For application forms:

American Medical College
Application Service (AMCAS)
2501 M Street N.W., Lobby 26
Washington, D.C. 20037-1300
(202) 828-0600

Key Deadlines

November 15 (Postmarked)
AMCAS Application deadline

December 1
MSTP Application deadline

May 1
Enrollment deposit due

August 1
Early Decision Program
deadline year prior to the
year of admission

October 1
Early Decision
notification date

All information included in this booklet is subject to change by actions of the Medical School

