

MICHIGAN STATE
UNIVERSITY

College of
Osteopathic Medicine



COURSE CATALOG
2020-21

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Professional Program in Osteopathic Medicine

Overview

The College of Osteopathic Medicine at Michigan State University (MSUCOM) offers a professional graduate program leading to the degree of Doctor of Osteopathic Medicine (D.O.). The program is accredited by the Commission on Osteopathic College Accreditation (COCA).

The D.O. program is organized to develop the knowledge, skills, attitudes and behaviors consistent with the competent practice of osteopathic medicine. The four-year program is divided into preclerkship and clerkship phases. In the preclerkship phase, the foundational biomedical sciences and clinical disciplines are presented through an integrated curriculum. Students are introduced to clinical skills, including professional development, data gathering, physical examination, diagnostic reasoning, and osteopathic principles and their application to patient care. Early clinical experiences and patient encounters are interwoven to promote connections. The clerkship phase provides immersive training across core clinical disciplines in the MSUCOM Statewide Campus System, as well as options for elective rotations throughout Michigan and elsewhere. Throughout the program, there is longitudinal integration of the osteopathic core competencies, including development of professionalism and communication skills for interprofessional patient care; strategies for self-directed, lifelong learning; and application of principles of research and scholarly inquiry.

This Course Catalog is periodically updated, reflecting ongoing development of courses and programs within the College that are available to students enrolled in the D.O. program. Other majors and degree programs housed within the College of Osteopathic Medicine and its Departments can be found elsewhere. Further information regarding the academic organization of the university, degree programs, and individual courses described herein, may also be found through the MSU Registrar site at <https://reg.msu.edu>.

Updated June 2020

Admission

The science and practice of osteopathic medicine require an understanding of the relationships among the physical, biological, psychological, cultural, and environmental aspects of human behavior. Thus, osteopathic education requires preparation in the natural, social, and behavioral sciences and the humanities. Candidates are expected to demonstrate their ability to work and think independently and in a scholarly manner. The mean grade-point average of students who are admitted to the program is 3.5 to 3.6.

Applicants for admission to the first-year class in the college must meet the following minimum requirements:

- Completion of at least 90 semester credits within a college or university accredited by a regional accrediting commission of higher education.
- Completion of eight semester credits of biology with no grade below 2.0, including both course work and laboratory work in general biology or general zoology.
- Completion of 16 semester credits of chemistry, including three semester credits of biochemistry, with no grade below 2.0.
- Completion of 6 semester credits of English—including both oral and written English, with no grade below 2.0.
- The Medical College Admission Test (MCAT) must be taken by the end of September of the year application is being made. Scores may not be more than three years old.
- Suggested science course electives include anatomy, physiology, microbiology, histology, and statistics at the 300- and 400-levels.
- Suggested medical humanities and ethics electives include course work in philosophy, history of medicine and medical ethics.

An application must be completed and all official transcripts submitted to the American Association of Colleges of Osteopathic Medicine Application Service ([AACOMAS](#)): it is highly recommended that the application be submitted no later than June 1 of the application year for students who wish to begin classes the following spring. The Michigan State University College of Osteopathic Medicine forwards to all applicants a secondary application. Early application is essential because the college admits its students on a rolling basis. Michigan State University College of Osteopathic Medicine classes begin in June. Most Admissions Committee reviews are conducted between September and March. Selection of students for the incoming class and for the waiting list is generally completed by early April.

Requirements for the Doctor of Osteopathic Medicine degree

The standard duration of the D.O. degree program is four years. A student may be granted up to six years to complete all degree requirements, as defined in the MSUCOM Policy for Retention, Promotion, and Graduation. Specific program requirements leading to conferral of the D.O. degree include:

1. Completion (passing grade or successful remediation) of each required course in the preclerkship and clerkship phase
2. Passing score on the National Board of Osteopathic Medical Examiners (NBOME) COMLEX-USA Level 1, COMLEX-USA Level 2 Cognitive Evaluation (CE), and COMLEX-USA Level 2 Performance Evaluation (PE) licensure examinations, with no more than three (3) attempts permitted on each examination
3. Compliance with annual training requirements of the Responsible Conduct of Research (RCR) program
4. Achievement of the academic requirements and professional conduct expectations of the D.O. program as outlined in the policies and procedures of MSUCOM and MSU

Requirements for Graduation

To graduate from Michigan State University with a Doctor of Osteopathic Medicine (D.O.) degree, a student must satisfactorily complete all required courses, pass COMLEX-USA Level 1, Level 2CE and Level 2PE examinations of the National Board of Osteopathic Medical Examiners.

In addition, each student must complete four years of Responsible Conduct of Research (RCR) training and receive the endorsement of the Committee on Student Evaluation (COSE) and an affirmative vote from the faculty of the College. The Policy for Promotion, Retention and Graduation is available to each student online upon admission to the College of Osteopathic Medicine.

MSUCOM Educational Program Objectives

In addition to the core competencies, MSUCOM has identified a series of Program Objectives that define the knowledge, skills and attitudes/behaviors that are expected of students prior to graduation.

Knowledge: The MSUCOM student will understand:

- K1. Normal structure-function relationships that provide a basis for understanding and treating disease.
- K2. Biological mechanisms governing homeostasis.
- K3. Principles of preventive medicine and health promotion.
- K4. Genetic, biochemical, microbiologic, immunologic, physiologic and environmental mechanisms that underlie disease states and their treatment.
- K5. The manifestations and consequences of illness at various stages of life.
- K6. Clinical, laboratory, radiologic and pathologic manifestations of disease states.
- K7. Mechanisms of drug action, pharmacokinetics, pharmacodynamics and therapeutics.
- K8. The fundamental osteopathic principles of body unity, the interrelatedness of structure and function, and the human body's self-healing and self-regulatory mechanisms that provide the foundation for osteopathic practice.
- K9. The basic science, mechanisms of action and physical findings of somatic dysfunction.
- K10. The mechanisms of action, indications and contraindications, and basic application of Osteopathic Manipulative Treatment (OMT).
- K11. Fundamental epidemiologic concepts, methods and statistical principles that underlie evidence-based medicine.
- K12. The impact of social inequalities in health care and the factors that are determinants of health outcomes.
- K13. The personal values, attitudes and biases that influence patient care.
- K14. The ethical principles that underlie the medical profession and professional behavior.
- K15. The structure and function of the health care system and how it affects the delivery of osteopathic patient care.

Skills: The MSUCOM student will be able to:

- S1. Identify, access, interpret and apply medical evidence contained in the scientific literature.
- S2. Elicit a comprehensive history from a patient and other sources as appropriate and perform a clinically appropriate physical examination that integrates osteopathic principles and practices.
- S3. Interpret relevant laboratory, imaging and other diagnostic studies in the context of osteopathic patient care.
- S4. Communicate effectively with patients, families, colleagues and other health professionals and caregivers in various clinical settings.
- S5. Generate, access, and test appropriate hypotheses during the medical interview and physical examination to develop and prioritize an appropriate list of potential diagnoses.
- S6. Recognize and incorporate into clinical data gathering and decision making the psychosocial and cultural factors that contribute to health, illness, and behavior.

- S7. Competently perform basic clinical procedures essential for a general osteopathic practice.
- S8. Apply osteopathic principles, including the application of OMT and principles of preventative medicine and health promotion, into an appropriate patient-centered, evidence-based and cost-effective patient care plan.
- S9. Relate effectively to and build rapport with patients of all ages, gender, culture, educational and economic backgrounds.
- S10. Work in cooperation with other health care professionals in the care of patients and in the provision of quality patient-centered care.
- S11. Use guidelines and other standards of patient care and patient safety appropriately in osteopathic medical practice.

Attitudes/Behaviors: The MSUCOM student will demonstrate:

- A1. Compassion and sensitivity in the care of patients and respect for their privacy, dignity and right to be fully involved in decisions about care.
- A2. A responsiveness to the needs of patients and society that supersedes self-interest.
- A3. Accountability to patients, society and the profession.
- A4. A commitment to excellence, continuous self-assessment and ongoing professional development.
- A5. Commitment to the need to apply ethical principles in the execution of all duties and in all research endeavors.
- A6. Dedication to one's own well-being, in addition to that of patients.
- A7. Honesty and integrity in all interactions.
- A8. A commitment to promote health and well-being of the communities they serve.

Preclerkship Curriculum

The preclerkship curriculum consists of 98 required credit hours across seven semesters, representing years one and two of the four-year program. The courses are offered in a predefined sequence; successful completion of each course in a semester is required to advance to the following semester.

Required Preclerkship Courses

Semester 1 – Summer

- **ANTR 510 – Clinical Human Gross Anatomy and Palpatory Skills** [8 CH]
Description: Introduction to macroscopic human structure, landmarks, and spatial relationships using laboratory prosections, multimedia, live human palpation models, and diagnostic imaging. Clinical correlations. Correct usage of clinical-anatomical language. Development of osteopathic motor skills for performing basic patient palpation.
- **BMB 516 – Metabolic Biochemistry: Nutrients and Products** [1 CH]
Description: Basic biochemical principles and terminology. Overview of metabolism of biomolecules of importance to medical biology and human pathophysiology.
- **OST 598 – Evidence Based Health Science for Osteopathic Medical Students** [1 CH]
Description: Evidence-based approach to osteopathic basic science and clinical education and application to health science critical review of literature, and research design.

Semester 2 – Fall

- **OMM 511 – Osteopathic Manipulative Medicine 1** [1 CH]
Description: Basic palpatory skills and clinical knowledge leading to osteopathic diagnosis and treatment.
- **BMB 528 – Molecular Biology and Genetics** [2 CH].
Description: Basic principles of molecular biology and human medical genetics. Storage and expression of genetic information. Transmission of genetic information of progeny.
- **OST 551 – Osteopathic Patient Care 1** [2 CH]
Description: Clinical assessment skills and evidence-based medicine to develop effective critical thinking in the doctor patient relationship.
- **MMG 531 – Medical Immunology** [2 CH]
Description: Basic principles of immunology. Overview of concepts and terminology in relation to human disease defenses.

- **MMG532 – Medical Microbiology** [2 CH]
Description: Basic principles of microbiology including bacteriology, virology, mycology, and parasitology and their relationship to disease in humans.
- **PHM 564 – Basic Principles of Medical Pharmacology** [2 CH]
Description: Basic principles of pharmacology and toxicology and selected drugs.
- **PSL 539 – Principles of Cell Biology and Pathophysiology** [4 CH]
Description: Modern concepts of human cell biology as a basis for understanding integration of structure (histology) and function (physiology) in health and disease (pathology). Introduction to adaptive growth response, cell injury, inflammation, hemodynamic disorders, and tissue repair.

Semester 3 – Spring

- **OMM 512 – Osteopathic Manipulative Medicine 2** [1 CH]
Description: Continuation of OMM 511. Basic palpatory skills and clinical knowledge leading to osteopathic diagnosis and treatment.
- **OST 552 – Osteopathic Patient Care 2** [2 CH]
Description: Clinical assessment skills and evidence-based medicine to develop effective critical thinking in the care of patients, as it relates to neurology, orthopedics, physiatry, endocrine, female reproduction and genitourinary systems.
- **OST 556 – Pediatrics 1** [1CH]
Description: Normal growth and development of children from birth to 18 years. Conditions of the nervous, musculoskeletal, endocrine and genitourinary systems that affect children.
- **OST 571 – Neuromusculoskeletal System** [10 CH]
Description: Systems Neuromusculoskeletal Medicine from basic science through clinical neurology, orthopedics, rheumatology, physiatry and ophthalmology. Neuroanatomy, orthopedic anatomy, integration with clinical neurology, orthopedics, physiatry and ophthalmology.
- **OST 572 – Genitourinary System** [3 CH]
Description: Normal urinary and male reproductive structure and function; principles of diagnosis and management of urinary and male reproductive disorders. Integration of basic science and clinical information related to the urinary and male reproductive systems.
- **OST 573 – Endocrinology System** [3 CH]
Description: Multidisciplinary approach to endocrinology. Normal endocrine structure and function; principles of diagnosis and management of endocrine disorders. Integration of basic science and clinical information.

Semester 4 – Summer

- **OMM 513 – Osteopathic Manipulative Medicine 3** [1 CH]
Description: Continuation of OMM 512. Basic palpatory skills and clinical knowledge leading to osteopathic diagnosis and treatment.
- **OST 553 – Osteopathic Patient Care 3** [3 CH]
Description: Integration of components of the doctor patient relationship, clinical assessment skills and evidence-based medicine to develop effective critical thinking and assessment skills in the care of patients. Correlations to concurrent integumentary and gastrointestinal systems courses. Preparation for future role as physician educator.
- **OST 557 – Pediatrics II** [1 CH]
Description: Normal structure, function and pathologies of the integumentary, reproductive and gastrointestinal systems as they relate to children.
- **OST 574 – Female Reproductive System** [3 CH]
Description: Normal structure and function of related pathologies with the female reproductive system. Integration of basic science and clinical information in obstetrics and gynecology.
- **OST 575 – Gastrointestinal System** [6 CH]
Description: Systems biology approach to the entire digestive track, including accessory organs of digestion. Normal structure and function and pathologies. Integration of basic science and clinical information.
- **OST 576 – Integumentary System** [2 CH]
Description: Systems biology approach to the integumentary system, to include the skin and its epidermal derivatives. Normal structure and function and pathologies. Integration of basic science and clinical information.
- **FCM 640 – Principles of Family Medicine I (Preceptor)** [1 CH]
Description: Preceptorship experience in family medicine taught by faculty and clinical preceptors at multiple sites through discussion and hands-on experience.

Semester 5 – Fall

- **OMM 514 – Osteopathic Manipulative Medicine 4** [1 CH]
Description: Advanced osteopathic palpatory skills and clinical knowledge leading to osteopathic diagnosis and treatment.

- **OST 554 – Osteopathic Patient Care 4** [3 CH]
Description: Integration of components of the doctor patient relationship, clinical assessment skills and evidence based medicine to develop effective critical thinking and assessment skills in the care of patients. Correlations to concurrent psychopathology, hematopoietic, and cardiovascular systems courses.
- **OST 558 – Pediatrics III** [1 CH]
Description: Normal structure, function and pathologies focusing on behavioral, cardiovascular, hematopoietic and respiratory systems as they relate to the pediatric population. Ethical considerations in pediatrics.
- **OST 577 – Psychopathology** [2 CH]
Description: Systems biology approach to the behavioral system. Normal structure and function and pathologies of the mind to include integration of basic science and clinical information.
- **OST 578 – Hematopoietic System** [2 CH]
Description: Systems biology approach to the hematopoietic system including normal structure and function, hematopoiesis, clotting and hematopoietic pathologies. Integration of basic science and clinical information.
- **OST 579 – Cardiology System** [9 CH]
Description: Systems biology approach to the cardiovascular system, including the heart and vasculature throughout the body. Normal structure and function and pathologies. Integration of basic science and clinical information.
- **FCM 650 – Principles of Family Medicine (Preceptor)** [1 CH]
Description: Preceptor experience in family medicine taught by faculty and clinical preceptor at multiple sites through lecture and hands-on experience. Continuation of FCM 640.

Semester 6 – Spring

- **OMM 515 – Osteopathic Manipulative Medicine 5** [1 CH]
Description: Continuation of OMM 514. Advanced osteopathic palpatory skills and clinical knowledge leading to osteopathic diagnosis and treatment.
- **OST 555 – Osteopathic Patient Care 5** [2 CH]
Description: Integration of components of the doctor patient relationship, clinical assessment skills and evidence-based medicine in the care of patients. Correlation to concurrent respiratory system course. Presentation skills.
- **OST 558 – Pediatrics III (continuation)**
Description: Normal structure, function and pathologies focusing on behavioral, cardiovascular,

hematopoietic and respiratory systems as they relate to the pediatric population. Ethical considerations in pediatrics.

- **OST 580 – Respiratory System** [7 CH]
Description: Systems biology approach to the entire respiratory system.
- **OST 583 – Geriatrics** [1 CH]
Description: Normal aging, structure, function and pathologies of older persons greater than 65.
- **FCM 650 –Principles of Family Medicine (Preceptor)** [1 CH]
Description: Preceptor experience in family medicine taught by faculty and clinical preceptor at multiple sites through lecture and hands-on experience. Continuation of FCM 640.

NOTE: a total of two preceptor experiences (FCM 640/650) are completed in either semesters 4, 5 or 6 (or a combination thereof).

Semester 7 - Summer

- **OST 582 – Transitions I: Board Preparation** [6 CH]
Description: Selected topics in preparation for licensure board exams.
- **OST 601 – Transitions II: Classroom to Bedside** [5 CH]
Description: Selected topics designed to assist the COM student in transitioning from the classroom to the clinical learning environment.

Pre-Clerkship Electives

- **ANTR 585 – Directed Study in Prosection** [1 to 5 CH]
Description: Prosection of selected regions and isolated structures of preserved human cadavers. Oral presentation.
- **ANTR 590 – Independent Study in Clinical Human Morphology** [1 to 5 CH]
Description: Independent study of a specific topic from gross anatomy, histology, radiological anatomy, cytology, neuroscience, or embryology.
- **FCM 590 – Medical Spanish** [1 CH]
Description: Provides students with Spanish language skills needed to provide basic H&Ps, follow-up care, and provide prescription instructions to Spanish-speaking patients. The goal of the course is to help future health care providers better communicate with Spanish-speaking patients and provide culturally sensitive health care services to this growing population.
- **IM 618 – Clinical Tropical Medicine** [2 CH]
Description: Provides an introduction to the practice of clinical medicine in resource-challenged settings. The focus of the course is on Africa, because of the clinical electives offered by MSU-COM for fourth year students, but much of the content will be relevant in other settings.
- **NUR 423 – Transitional Needs of Individuals with Intellectual and/or Developmental Disabilities** [3CH]
Description: Analyze the complex transitional needs of adults with intellectual and/or developmental disabilities.
- **OMM 500 – Student Osteopathic Manipulative Medicine Practical Laboratory** [1 CH]
Description: Elective course of didactic and clinical sessions which apply osteopathic principles and techniques on patients.
- **OMM 590 – Sports OMT Elective** [1 CH]
Description: Provides the student with an opportunity to actively treat MSU Division I athletes using OMT under the guidance of faculty residents. This course is a two-year commitment. First year students are trained to evaluate and treat the lumbar, sacrum, pelvis, and lower extremity regions using a standardized OMT protocol. Second year students spend time at Jenison Field House treating MSU Division I cross-country athletes using the standardized OMT protocol.
- **OMM 590 – Teaching Assistant** [1 CH]
Description: Provides students with experience in teaching OMM diagnosis and treatment in a small group setting.

- **OST 591 – Medical Case Study Journal Club [1 CH]**
 Description: Analysis and presentation of published clinical case reports in the context of basic science principles and biomedical concepts.
- **OST 599 – Biomedical Research [1-3 CH]**
 Description: Basic, applied, or translational medical research under the direction of a mentor. Research topic is arranged with the research director of clinician researcher.
- **OST 686 – Global Health: Mexico – Clinical Immersion [1-20 CH]**
 Description: Observation of and supervised participation in host country’s healthcare delivery system. Etiology, treatment, and control of endemic disease. Exploration of local culture and history.
- **OST 687 – Global Health: Peru – Clinical Immersion [1-20 CH]**
 Description: Observation of and supervised participation in host country’s healthcare delivery system. Etiology, treatment, and control of endemic disease. Exploration of local culture and history.
- **OST 688 – Global Health: Cuba – Clinical Immersion [1-20 CH]**
 Description: Observation of and supervised participation in host country’s healthcare delivery system. Etiology, treatment, and control of endemic disease. Exploration of local culture and history.
- **OST 689 – Global Health: Haiti – Clinical Immersion [3-6 CH]**
 Description: Observation of and supervised participation in host country’s healthcare delivery system. Etiology, treatment, and control of endemic disease. Exploration of local culture and history.
- **OST 690 – Global Health: Dominican Republic – Clinical Immersion [1-20 CH]**
 Description: Observation of and supervised participation in host country’s healthcare delivery system. Etiology, treatment, and control of endemic disease. Exploration of local culture and history.
- **OST 691 – Global Health: Guatemala – Clinical Immersion [1-20 CH]**
 Description: Observation of and supervised participation in host country’s healthcare delivery system. Etiology, treatment, and control of endemic disease. Tropical disease. Exploration of local culture and history.
- **OST 693 – Global Health: South Korea – Clinical Immersion [1-6 CH]**
 Description: Observation of and supervised participation in host country’s healthcare delivery system. Etiology, treatment, and control of endemic disease. Exploration of local culture and history.

- **OST 694 – Global Health: Nepal – Clinical Immersion** [1-6 CH]
Description: Observation of and supervised participation in host country's healthcare delivery system. Etiology, treatment, and control of endemic disease. Exploration of local culture and history.
- **PHM 590 – Case Studies in Clinical Pharmacology** [2 CH]
Description: Selected case studies emphasizing clinical applications of pharmacological principles. Evaluation of new drugs, drug advertising, and adverse drug reactions.
- **PMR 590 –Basics of Medical Acupuncture** [1 CH]
Description: Provides students with a basic understanding of the history, scientific evidence and practical uses of medical acupuncture, using a lecture & hands on laboratory format.
- **PSC 591 – Happiness and Emotional Resilience Promotion for Health Care Providers** [1 CH]
Description: Provides students with evidenced-based educational modules that were created to address the specific needs of medical students.

Clerkship Curriculum

The clerkship curriculum consists of 133 required credit hours in years three and four of the four-year program. Students may advance to clinical rotations after successful completion of the COMLEX-USA Level 1 examination. During the clerkship curriculum, students will complete 77 credits (among six semesters) of required clinical clerkship core rotation courses and an additional 56 credits (among six semesters) to be selected from available required clinical clerkship elective rotation courses. Core rotation courses are scheduled by the COM Clerkship Office and Base Hospital training site and may occur in different sequences. Most core rotation courses are completed during year three. Two required *longitudinal* courses span each of the third and fourth year.

Required clinical elective clerkship rotation courses: the student must complete 56 credits (or 40 weeks) of additional clinical elective clerkship rotation courses; 18 credits (12 weeks) must be chosen from the medicine category and 12 credits (8 weeks) must be chosen from the surgery category. The additional 10 weeks can be chosen from either the medicine or surgery category.

Required clinical clerkship core rotation courses:

- **OST 602 - Transitions 2 – Clerkship Orientation** [5 CH]
Description: A 24-week ambulatory care continuity experience involving 12 weeks in a multidisciplinary environment (family medicine, pediatrics, and internal medicine), 4 weeks in family medicine and 8 weeks in specialty areas (internal medicine, surgery, pediatrics, and obstetrics and gynecology). Didactic sessions are scheduled concurrently.
- **OST 603 - Core Clinical Concepts** [9 CH]
Description: A 36-week didactic continuity experience delivered through online self-preparation and classroom instruction at each of the base hospitals. This didactic curriculum is broken down into nine consecutive 4-week modules and includes symptom-based topics that relate to multiple specialties with a different focus for each 4-week module.
- **FCM 620 - Family Medicine Clerkship** [6 CH]
Description: Clinical exposure in the area of family medicine.
- **FCM 622 - Family Medicine Sub-Internship (or IM 658)** [6 CH]
Description: Clinical exposure in osteopathic family medicine. Proficiency in advanced motor skills and aptitudes; comprehension of concepts and principles; patient evaluation; diagnosis; management; therapy.
- **IM 650 - Internal Medicine In-Patient** [6 CH]
Description: Clinical exposure in osteopathic internal medicine in the hospital setting. Proficiency in motor skills and aptitudes; comprehension of concepts and principles; patient evaluation; diagnosis; management; therapy.

- **IM 657 - Emergency Medicine [6 CH]**
Description: Acute evaluation and management of patients in the hospital emergency department and other locations.
- **IM 658 - Internal Medicine Out-Patient (or FCM 622) [6 CH]**
Description: Clinical exposure in osteopathic internal medicine in the out-patient setting. Proficiency in motor skills and aptitudes; comprehension of concepts and principles; patient evaluation; diagnosis; management; therapy.
- **IM 660 - Internal Medicine Sub-Internship [6 CH]**
Description: Clinical exposure in osteopathic internal medicine. Proficiency in advanced motor skills and aptitudes; comprehension of concepts and principles; patient evaluation; diagnosis; management; therapy.
- **PSC 608 – Psychiatry [6 CH]**
Description: Experience in psychiatry in clinical settings with adults.
- **NOP 656 – Neurology [6 CH]**
Description: Clinical exposure in neurology. Proficiency in motor skills, aptitudes; comprehension of concepts and principles; patient evaluation, diagnosis, management, and therapy.
- **OSS 651 - Obstetrics/Gynecology [6 CH]**
Description: Obstetric patient evaluation and management: motor skills, aptitudes, evaluation of the prenatal through postpartum patient and management of gynecologic problems.
- **OSS 653 – Surgery [6 CH]**
Description: Motor skills, aptitudes, comprehension of concepts and principles, patient evaluation, diagnosis, management, therapy.
- **PED 600 – Pediatrics [6 CH]**
Description: Practical clinical exposure in the area of pediatrics.
- **OST 604 - Essential Clinical Skills for Senior Medical Students [1 CH]**
Description: Longitudinal experience addressing essential skills for senior osteopathic medical students.
- **OMM 602 - Osteopathic Principles and Practice [2 CH]**
Description: Integration of osteopathic manipulative medicine and osteopathic principles and practice during clerkship rotations.

Required clinical elective clerkship rotation courses: the student must complete 56 credits (or 40 weeks) of additional clinical elective clerkship rotation courses; 18 credits (12 weeks) must be chosen from the medicine category and 12 credits (8 weeks) must be chosen from the surgery category. The additional 10 weeks can be chosen from either the medicine or surgery category.

The following rotation courses may be credited toward the medicine requirement:

- **ANTR 685 - Directed Study in Clinical Pro-section** [variable CH]
Description: Anatomical prosection and body-region specific pathologies.
- **FCM 621 - Family Medicine Specialty Rotation** [variable CH]
Description: Clinical exposure in osteopathic family medicine subspecialty rotations. Proficiency in motor skills and aptitudes; comprehension of concepts and principles; patient evaluation; diagnosis; management; therapy.
- **HM 610 - Pathology (8 weeks maximum)** [variable CH]
Description: Anatomic and clinical pathology with emphasis on clinical-pathological correlation. Conducted in pathology departments of affiliated hospitals.
- **IM 621 - Clinical Tropical Medicine (Malawi)** [variable CH]
Description: Supervised clinical experiences in a large African teaching hospital and its outpatient clinics; students must spend at least six weeks on site. Small group discussions led by MSU faculty.
- **IM 651 - Cardiology** [variable CH]
Description: Intensive experience in bedside diagnosis and care of patients with the more frequently seen cardiac problems.
- **IM 652 – Gastroenterology** [variable CH]
Description: Inpatient and outpatient clinical gastroenterology. GI diseases. Patient evaluation and management. Behavioral science and patient care.
- **IM 653 - Oncology and Hematology** [variable CH]
Description: Diagnosis, staging, and treatment methods of solid tumors and other neoplasms. Pharmacology of cytotoxic agents. Issues in nutrition. Behavioral approaches to the terminally ill patient.
- **IM 654 - Pulmonary Disease (sleep disorders)** [variable CH]
Description: Evaluation and treatment of patients with common pulmonary diseases including acute and chronic respiratory failure, primary and metastatic lung tumors, various bacterial and non-bacterial pneumonias.
- **IM 655 – Nephrology** [variable CH]
Description: Clinic and hospital-based experience to develop basic skills in evaluation and management of patients with renal disease. Integration of renal physiology and pathophysiology.
- **IM 659 - Medical Critical Care (Intensive Care Unit/Critical Care Unit)** [variable CH]
Description: Clinical exposure in osteopathic medical critical care (distinct from surgical critical care). Proficiency in motor skills and aptitudes; comprehension of concepts and principles; patient evaluation; diagnosis; management; therapy.

- **IM 661 - Internal Medicine Specialty** [variable CH]
 Description: Clinical exposure in osteopathic internal medicine subspecialty rotations. Proficiency in motor skills and aptitudes; comprehension of concepts and principles; patient evaluation; diagnosis; management; therapy.
- **IM 662 - Urgent Care** [variable CH]
 Description: Acute evaluation and management of patients in the outpatient urgent care setting.
- **IM 663 - Emergency Medicine/Wilderness Medicine** [variable CH]
 Description: Acute evaluation and management of patients in the austere environment – wilderness or other location, including disaster medicine, and emergency medicine system.
- **IM 664 - Pediatric Emergency Medicine** [variable CH]
 Description: Acute evaluation and management of patients in the hospital based pediatric emergency department.
- **IM 665 - Emergency Medicine Advanced** [variable CH]
 Description: Advanced acute evaluation and management of patients in the hospital emergency department and other locations.
- **IM 666 - Emergency Medicine Toxicology** [variable CH]
 Description: Evaluation and management of patients who suffer from an exposure to any form of toxins, the typical clinical presentation, evaluation and management including antidotes.
- **IM 667 - Emergency Medicine Hyperbaric Medicine Wound Management** [variable CH]
 Description: Management of wounds from all causes, including the use of a hyperbaric chamber as a treatment strategy.
- **IM 668 - Emergency Medicine Service Disaster Management** [variable CH]
 Description: Emergency Medical Services and Disaster Management designed to expose the student to multiple facets of emergency care in the community and outside the emergency department, including community disaster preparedness.
- **IM 669 - Emergency Medicine Ultrasound** [variable CH]
 Description: Bedside ultrasound, integrating curriculum related to the physics and orientation of ultrasound images to obtaining images at the bedside to begin a portfolio.
- **NOP 657 - Neurology Specialty** [variable CH]
 Description: Clinical exposure in specialties of Neurology. Proficiency in motor skills and aptitudes; comprehension of concepts and principles; patient evaluation; diagnosis; management; therapy.
- **OMM 601 - Osteopathic Manipulative Medicine** [variable CH]
 Description: Advanced training in the diagnosis of musculoskeletal dysfunction and application of osteopathic manipulative techniques.

- **OST 615 - Biomedical Research** [variable CH]
 Description: Mentored exposure to either basic or clinical research and development of skills to perform clinical or basic science research. Research topic is arranged with the research director or clinician researcher.
- **OST 685 - Global Health: International** [variable CH]
 Description: Faculty-supervised international clerkship opportunities to immerse students into global healthcare institutions and communities with various healthcare delivery systems. This course will introduce students to common diseases and treatment, as well as cultural sensitivity outside of the required clerkship experience in our affiliated hospital system.
- **OST 686 - Global Health: Mexico – Clinical Immersion** [variable CH]
 Description: Observation of and supervised participation in host country’s healthcare delivery system. Etiology, treatment, and control of endemic disease. Exploration of local culture and history.
- **OST 687 - Global Health: Peru – Clinical Immersion** [variable CH]
 Description: Observation of and supervised participation in host country’s healthcare delivery system. Etiology, treatment, and control of endemic disease. Exploration of local culture and history. Offered second half of semester.
- **OST 688 - Global Health: Cuba – Clinical Immersion** [variable CH]
 Description: Observation of and supervised participation in host country’s healthcare delivery system. Etiology, treatment, and control of endemic disease. Exploration of local culture and history.
- **OST 689 - Global Health: Haitian – Clinical Immersion** [variable CH]
 Description: Introduction to culture and health care delivery in Haiti including rotations in primary care clinics and hospitals.
- **PED 601 - Pediatric Specialty-Neonatal Intensive Care & Pediatric Intensive Care** [variable CH]
 Description: Clinical exposure in specialties of Pediatrics. Proficiency in motor skills and aptitudes; comprehension of concepts and principles; patient evaluation; diagnosis; management; therapy.
- **PMR 601 - Physical Medicine & Rehabilitation** [variable CH]
 Description: Physical medicine and rehabilitation inpatient and ambulatory setting clinical experience, didactic sessions, case documentation and presentation, hospital rounds. Strong emphasis on evaluation of neuromusculoskeletal disorders and treatment of function deficits.
- **PSC 609 - Adult Psychiatry** [variable CH]
 Description: Experience in psychiatry in clinical settings with adults.
- **PSC 610 - Child Psychiatry** [variable CH]
 Description: Experience in psychiatry in clinical settings with child patients and their families.

- **PSC 611 - Addiction Psychiatry** [variable CH]
Description: Knowledge and skills in psychopathology, psychiatric diagnosis, psychiatric therapies and prevention with addiction patients and their families.
- **PSC 612 - Geriatric Psychiatry** [variable CH]
Description: Knowledge and skills in psychopathology, psychiatric diagnosis, psychiatric therapies and prevention of psychiatric illness with geriatric patients and their families.
- **RAD 609 - Radiology Specialty** [variable CH]
Description: Diagnostic imaging consultation. Participation in image interpretation and observation in hospital or out-patient radiology setting. Radiological procedure guideline and patient safety and comfort. Complications of radiological procedures.
- **RAD 610 - Radiology (two-week rotation)** [variable CH]
Description: Diagnostic imaging consultation. Participation in image interpretation and observation in hospital or out-patient radiology setting.

The following elective rotation courses may be credited toward the surgery requirement:

- **NOP 620 - Ophthalmology (Neuro-Ophthalmology)** [variable CH]
Description: Study in general or specialty neurology and ophthalmology.
- **OSS 564 - Anesthesiology (two-week rotation)** [variable CH]
Description: Motor skills, concepts and principles, patient evaluation, management and therapy.
- **OSS 640 - Cardiology Thoracic/Vascular Surgery** [variable CH]
Description: Cardio thoracic/vascular surgery management and treatment. Proficiency in motor skills, aptitude, comprehension of concepts and principles, patient evaluations, diagnosis, management, therapy.
- **OSS 641 - Facial & Plastic Reconstruction Surgery (oral surgery)** [variable CH]
Description: Facial and plastic reconstruction management and treatment. Proficiency in motor skills, aptitude, comprehension of concepts and principles, patient evaluations, diagnosis, management, therapy.
- **OSS 642 - Neurosurgery** [variable CH]
Description: Neurosurgery management and treatment. Proficiency in motor skills, aptitude, comprehension of concepts and principles, patient evaluations, diagnosis, management, therapy.
- **OSS 643 – Podiatry** [variable CH]
Description: Podiatry management and treatment. Proficiency in motor skills, aptitude, comprehension of concepts and principles, patient evaluations, diagnosis, management, therapy.

- **OSS 644 - Sports Medicine** [variable CH]
Description: Sports Medicine management and treatment. Proficiency in motor skills, aptitude, comprehension of concepts and principles, patient evaluations, diagnosis, management, therapy.
- **OSS 645 – Urological** [variable CH]
Description: Natural history, pathophysiology, presentation, investigation and treatment management of patients.
- **OSS 646 - Maternal Fetal Medicine** [variable CH]
Description: Maternal and Fetal Medicine management and treatment. Proficiency in motor skills, aptitude, comprehension of concepts and principles, patient evaluations, diagnosis, management, therapy.
- **OSS 647 - Reproductive Endocrine** [variable CH]
Description: Reproductive Endocrine management and treatment. Proficiency in motor skills, aptitude, comprehension of concepts and principles, patient evaluations, diagnosis, management, therapy.
- **OSS 648 - Anesthesiology Advanced** [variable CH]
Description: Advanced motor skills, concepts and principles, patient evaluation, management and therapy.
- **OSS 652 - Obstetrics & Gynecology Specialty** [variable CH]
Description: Obstetric patient evaluation and management: motor skills, aptitudes, evaluation of the prenatal through postpartum patient and management of gynecologic problems.
- **OSS 655 - Pain Management** [variable CH]
Description: Clinical experiences, didactic sessions and reading assignments for chronic pain management.
- **OSS 656 - Orthopedic (Orthopedic & Orthopedic Surgery)** [variable CH]
Description: Program developed to achieve proficiency in motor skills, aptitudes, comprehension of concepts and principles, patient evaluation, diagnosis, management, and therapy.
- **OSS 658 - Otorhinolaryngology (Ear, Nose and Throat)** [variable CH]
Description: Develop proficiency in motor skills, aptitudes, comprehension of concepts and principles, patient evaluation, diagnosis, management, and therapy.
- **OSS 663 - General Surgery (Surgical Intensive Care Unit)** [variable CH]
Description: Surgical diagnosis, management, and treatment. Proficiency in motor skills, aptitudes, comprehension of concepts and principles, patient evaluation, diagnosis, management, therapy.

NOTE: the number of rotation/course weeks determines the assigned credits.

Dual and Combined Degree Programs

MSUCOM offers a variety of additional graduate educational opportunities. For an overview, click on this link: [MSUCOM Dual Degree Programs](#).

D.O./Ph.D. Program

Since it began in 1979, the DO-PhD Physician Scientist Training Program has offered education and training to prepare individuals for careers in biomedical research and academic medicine, enabling them to become physician scientists. Students in the DO-PhD program spend at least seven to eight years in education and training to become medical scientists. Graduates find careers in biomedical research or academic medicine. Their training enables them to be physician scientists working on basic science or disease-related problems. Additional information is available by clicking on this link: [MSU DO-PhD Program](#).

D.O./M.P.H. Program

The Michigan State University College of Osteopathic Medicine has a joint DO/MPH degree program in conjunction with the Michigan State University Program in Public Health. To participate in this dual enrollment program, students must be independently accepted into the osteopathic program and to the master's in public health program at Michigan State University. Additional information is available by clicking on this link: [MSUCOM DO-MPH Program](#).

D.O./M.B.A. Program

The College of Osteopathic Medicine collaborates with the Eli Broad College of Business to offer a Doctor of Osteopathic Medicine and Master of Business Administration dual degree program, jointly administered by both colleges. A student pursuing a full-time M.B.A. degree jointly with a Doctor of Osteopathic Medicine (D.O.) degree can transfer a maximum of 12 credits to the M.B.A. program. For information about the Doctor of Osteopathic Medicine and Master of Business Administration dual-degree program, contact the Associate Dean in either college. Additional information is available by clicking on this link: [MSUCOM DO-MBA Program](#).

Graduate Study Opportunities

Individuals seeking graduate level research and education can find opportunities in the biomedical departments within MSUCOM. Additional information about these programs is available by clicking on this link: [MSU Registrar List of Biomedical Graduate Programs](#).

For additional information on MSUCOM programs, please visit the website: www.com.msu.edu



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