

# SCHOOL OF MEDICINE

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Mary Anne Jackson, M.D.

## **Vice Deans:**

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## **Senior Associate Dean:**

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 Robert Riss, M.D. (Career Advising)  
 Kathleen Spears, Ph.D. (Student Success at St. Joseph)

## **Council Chairs:**

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 James Wooten, Pharm.D. (Faculty Council)  
 Julie Banderas, Pharm.D. (Graduate Council)

Stacey Algren, M.D. (Council on Evaluation)  
Jared Keeler, M.D. (Council of Docents)  
Sara Gardner, M.D. (Council on Curriculum)  
Ayanda Chakawa, Ph.D. (Diversity, Equity & Inclusion Council)

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Julie Banderas, Pharm.D., (Graduate Health Professions in Medicine)  
Akin Cil, M.D. (Orthopaedic Surgery)  
Charles Donohoe, M.D. (Neurology)  
Brett Ferguson, D.D.S. (Oral and Maxillofacial Surgery)  
Stephen Jarvis, M.D. (Psychiatry)  
Kamani Lankachandra, M.D. (Pathology)  
Dev Maulik, M.D. (Obstetrics and Gynecology)  
Paula Monaghan-Nichols, Ph.D. (Biomedical Sciences)  
Jill Moormeier, M.D. (Internal Medicine)  
Mark Nichols, Ph.D. (Biomedical and Health Informatics)  
Beth Rosemergy, D.O. (Community and Family Medicine)  
Nelson Sabates, M.D. (Ophthalmology)  
Jennifer Elliot, M.D. (Anesthesiology)  
Glenn Talboy, M.D. (Surgery)  
Brian Carter, M.D. (Medical Humanities and Bioethics)  
John Borsa, M.D. (Radiology)

## About the School of Medicine

The University of Missouri opened a medical school in Kansas City in 1971 to meet the health care needs of Missouri and the nation. Using an alternative approach to medical education from that of the traditional four-year school, the UMKC School of Medicine accepts students directly out of high school for the combined baccalaureate/ Doctor of Medicine program (<http://med.umkc.edu/bamd/>), which allows students to graduate in six years with their medical degree.

The School's innovative curriculum provides students with early and continuous patient-care experience and fully integrates liberal arts/humanities, basic sciences and clinical medicine. The learning environment de-emphasizes competition and encourages learning through close faculty-student interaction and student partnerships.

Students begin learning about medicine and interacting with patients from the first day of class. They also learn the skills and attitudes that foster compassion, honesty and integrity. Hands-on learning and clinical experience are integrated throughout all the years of the program. The UMKC School of Medicine also offers the M.D. Program (<http://med.umkc.edu/md/>) to students who have obtained, or will soon earn, a baccalaureate degree or other professional degree. These students may complete their medical degree in four years.

The School of Medicine partners with six of the leading hospitals in Kansas City to provide students and residents outstanding medical education as they rotate through the various clinical departments. These hospitals include University Health, Children's Mercy Kansas City, Saint Luke's Hospital, Center for Behavioral Medicine, the Kansas City VA Medical Center and Research Medical Center. The School does not operate its own hospital, however many of the doctors who practice at these hospitals also hold faculty positions with the School. In 2020, the School of Medicine opened a new campus at Mosaic Life-Care based in St. Joseph, Missouri.

Our offerings are growing. The UMKC School of Medicine offers four master's programs: the Master of Science in Anesthesia (<http://med.umkc.edu/msa/>), Master of Medical Science Physician Assistant (<http://med.umkc.edu/pa/>), Master of Health Professions Education (<http://med.umkc.edu/mhpe/>) and the Master of Science in Bioinformatics (<http://med.umkc.edu/msb/>); two Graduate Certificates: Health Professions Education (<http://med.umkc.edu/gchpe/>) and Clinical Research (<http://med.umkc.edu/gc-clinical-research/>). The School of Medicine participates in the Interdisciplinary Ph.D. program (<http://med.umkc.edu/iphd/>) with a primary and co-discipline plan of study in biomedical and health Informatics.

All medical schools are reviewed and accredited by the Liaison Committee on Medical Education, a national body representing the Association of American Medical Colleges and the American Medical Association. This committee has endorsed the academic philosophy and plan, and the School is fully accredited.

For additional information, please click here to visit the School of Medicine website (<http://med.umkc.edu/>).

## Mission, Vision & Goals

# UMKC School of Medicine Strategic Plan

### Mission

The mission of the University of Missouri-Kansas City School of Medicine is to improve the health and well-being of individuals and populations through innovative educational programs in medicine and biomedical science, cutting-edge biomedical research, and leadership in academic medicine. The School strives to implement this mission with the highest professional and ethical standards, in a culture of diversity and inclusiveness, and in an environment that enables each individual to develop to his or her full potential.

### Vision

UMKC School of Medicine aims to be the anchoring institution for a leading academic health center.

### Introduction and Background

The UMKC School of Medicine opened in 1971 as the result of over a decade of community efforts to establish a medical school in Kansas City, Missouri. Both the history and the current mission and operations of the UMKC School of Medicine are deeply rooted in the community at the local, state, national and international levels. As part of a growing academic health sciences campus in the urban core of Kansas City, Missouri, the School advances the health of the community through education of physicians and other health care professionals, through research and application of new knowledge to health conditions that affect our community, through direct service in the community, and through economic development. In the nearly four decades that the School has been in existence, all of the four mission areas—education, research, service, and economic development—have grown and matured along with the Hospital Hill campus where the School is located. In 2021 the UMKC School of Medicine opened a new campus at Mosaic Life-Care in St. Joseph, Missouri. The University of Missouri-Kansas City is a public, urban-serving, research and doctoral university; both it and the School of Medicine are poised to make an even greater contribution to **“Advancing the Health of Our Community”** in the decades to come.

**School of Medicine Education Programs:** The UMKC School of Medicine was founded on an innovative medical education system based on: early and continuous clinical experiences, humanities woven throughout the curriculum, small group learning communities centered around a physician “docent,” continuous assessment of student progress, and an emphasis on application of the basic sciences in clinical medicine. The combined BA/MD degree program allows the school to accept the majority of its students directly out of high school and to develop the skills, knowledge, and attitudes of these students longitudinally over six years with a goal of instilling the highest standards of medical professionalism, clinical competency, humanism, and altruism during a highly formative period of their lives. The community-based setting has freed the school of fiscal and administrative concerns over the management of hospitals and practice plans. Time has proven the value of the innovative concepts and format of the original design of the medical school outlined in the original Academic Plan. The history and the first thirty-five years of education outcomes were recently published.

In addition to the baccalaureate/MD program, the School also admits three other categories of students seeking the MD degree: students who already have a baccalaureate degree or other professional degree and complete the last four years of the program as “MD-seeking” students; students who have a DDS degree and complete a combined MD/Oral Surgery residency program; and a limited number of transfer students who have completed their first two years of medical school at an accredited program. Over the past decade, all programs leading to the MD degree combined have resulted in approximately 90-100 graduates per year. Residency choices of students span the specialties and subspecialties, with approximately 40% initially entering the primary care fields of internal medicine, family medicine, pediatrics and medicine/pediatrics. In addition, 45% of graduates remain in the state of Missouri and the counties surrounding the two largest metropolitan areas of Kansas City and St. Louis. The school will continue its strong commitment to increasing the number of graduates of the medical school who serve the healthcare needs of Missouri.

Beginning in 2008, the school accepted its first students into graduate degree programs. The Master of Science in Anesthesia leading to a career as anesthesiologist assistants opened in 2008, and the Master of Science in Bioinformatics opened in Fall 2009. Since then the school has added the Master of Medical Science Physician Assistant, Master in Health Professions Education, Graduate Certificate in Health Professions Education and Graduate Certificate in Clinical Research. Most recently, the School of Medicine established a doctoral discipline in Biomedical and Health Informatics as part of the UMKC Interdisciplinary PhD program. These graduate programs are another means to meet pressing local and regional healthcare needs.

The School of Medicine is the institutional sponsor for over 40 residency and fellowship programs accredited by the Accrediting Council for Graduate Medical Education (ACGME) conducted at affiliated hospitals. Today, there are nearly 380 residents and 40 fellows in these ACGME accredited programs at six affiliated hospitals. Graduates from these programs are a major source of physicians in Kansas City and the surrounding regions.

**School of Medicine Research Programs:** The early efforts of the school were directed toward growth and building of medical education programs on the base of strong clinical affiliations. Over the past decade, scholarly research has become a major goal in order to discover and apply new knowledge to improve human health, to develop and maintain a community of scholars in support of a robust learning environment, and to provide economic development in the region. Concurrently, there has been increasing emphasis on research within the university as a whole and the region. The School of Medicine now has 22 endowed chairs and professorships, and the research funding has increased exponentially. The current total extramural funding in grants and contracts in the School has increased four-fold over the past decade and is now \$23 million annually. Total federal funding represents approximately half of the total. Research efforts are focused toward impact on community health conditions, especially in areas that link to areas of clinical strength. These efforts are designed to build and utilize large databases that go beyond “translational” research in general, and to

have impact on the health of our community in particular. Health impact may be either at the individual level—i.e. “personalized medicine”—or at the population level. Additionally, it may be directed at either prevention or diagnosis and treatment of disease.

**School of Medicine Community Engagement:** The UMKC School of Medicine is an essential community partner in advancing health through education and training of physicians and other healthcare providers, through research and application of new knowledge to address health issues, through direct provision of care (including volunteer work and service learning), and through economic development and stability in the urban core. Much has changed in the nearly 50 years since the School’s founding, but the values that relate to a commitment to serve the community have not.

The community has called for an overall strategic plan from UMKC, including in the life and health sciences. The School of Medicine is ready to deepen this partnership with the community to advance the health of our community. The following strategic plan outlines the specific goals and objectives of the School. These goals and objectives align with the overall strategic plans of the University of Missouri System and the University of Missouri-Kansas City

#### References

1. Dimond EG. The Academic Plan for the School of Medicine, University of Missouri-Kansas City. Last updated in 2009.
2. Drees B, Arnold L, Jonas H. The University of Missouri-Kansas City School of Medicine: Thirty-five years of experience with a non-traditional approach to medical education. *Academic Medicine*, 2007. 82:361-369
3. Time to Get It Right: A strategy for higher education in Kansas City. Greater Kansas City Community Foundation, 2005.

## Summary of Goals and Strategic Objectives

### Educate outstanding physicians, scientists, and healthcare providers for Missouri and the United States.

#### Goals:

- Advance our standing as a premier accelerated, dual-degree medical education program in the United States.
- Expand our program in Graduate Health Professions in Medicine by developing new degree and/or certificate programs to meet future healthcare and health sciences needs.
- Ensure that our learners have opportunities to engage in high-quality Research.
- Provide and enhance an outstanding clinical and educational experience in a positive learning environment for residents and fellows in their chosen field of medicine.
- Provide and enhance an outstanding clinical and educational experience, opportunities for lifelong learning, career advising, and a positive learning environment for students.

### Increase cutting-edge biomedical research.

#### Goals:

- Develop a strategic research fund to catalyze translational and health outcomes research.
- Advance existing programmatic excellence in health outcomes, informatics, patient safety, and community health.
- Join forces with our academic, clinical, and community partners to develop a UMKC Health Sciences research agenda.
- Engage with industry partners to pursue innovative entrepreneurial opportunities.

### Enhance the ability of our clinical partners to deliver state-of-the-art patient care.

#### Goals:

- Develop a framework to establish UMKC Health Sciences Center.
- Increase the scope and mission of education and research in simulation.
- Join forces with our clinical and academic partners to develop shared simulation strategies and goals.

### Improve the health of our community.

#### Goals:

- Recruit and retain faculty members who engage in funded, community-based research.
- Establish community-wide collaboratives to leverage resources for the advancement of community health.

## Faculty

### Graduate Health Professions in Medicine

Erin Aubrey; Director of Clinical Education, Assistant Teaching Professor; M.P.A.S. (University of Iowa)

**Phillip Byrne;** Associate Dean Graduate Medical Education; Assistant Teaching Professor, Ed.D., Assistant Teaching Professor, University of Missouri-Columbia

**Julie Banderas;** Assistant Dean, Chair, Professor, Department of Graduate Health Professions in Medicine; Pharm.D., (University of Nebraska)

**Lance Carter;** Program Director; Associate Teaching Professor; M.S.A., (Case Western Reserve University)

**Jonathan Chambers;** Director of Didactic Education, Assistant Teaching Professor, M.S.A, (University of Missouri Kansas City School of Medicine)

**Sara Cox;** Director of Didactic Education, Assistant Teaching Professor; M.P.A.S. (University of Nebraska Medical Center)

**Eric D. Johnson;** Program Director, Associate Teaching Professor, M.S. (Missouri State University)

**Angellar Manguvo;** Associate Teaching Professor, Ph.D. (University of Missouri)

**Margaret Munn,** Director of Clinical Education, Assistant Teaching Professor, M.S.A, (University of Missouri Kansas City School of Medicine)

**Stephanie Painter;** Director of Clinical Simulation, Assistant Teaching Professor, M.P.A. (Eastern Virginia Medical School).

**Adam Petersen;** Director of Simulation, Assistant Teaching Professor, M.S.A. (University of Missouri Kansas City School of Medicine)

**Jennifer Quaintance,** Associate Research Professor, Ph.D. (University of Kansas)

**David Walker,** Director of Student Assessment; Assistant Teaching Professor, M.P.A.S. (University of Nebraska Medical Center)

## Biomedical Sciences

**Limin Mao;** Research Professor; M.D. (Tongji Medical University)

**Darla McCarthy;** Associate Teaching Professor; Ph.D. (University of Colorado – Boulder)

**Paula Monaghan-Nichols;** Department Chair, Associate Dean for Research, Professor; Ph.D. (Medical Research Council, Edinburgh, Scotland)

**Bart Patenaude;** Associate Teaching Professor; Ph.D. (University of Louisville)

**Nilofer Qureshi;** Professor; Ph.D. (University of Wisconsin)

**Neerupma Silswal;** Associate Research Professor; Ph.D.

**Chad Touchberry;** Assistant Teaching Professor; Ph.D. (University of Kansas)

**Michael Wacker;** Associate Dean, Vice-Chair of Biomedical Sciences, Medical Student Research and Professor; Ph.D. (University of Kansas)

**Kristin A. Wright;** Associate Teaching Professor; Ph.D.

## Biomedical/Health Informatics

**Jenifer Allsworth;** Associate Professor; Ph.D. (Brown University)

**Jannette Berkley Patton;** Professor; Ph.D. (University of Kansas)

**An-Lin Cheng;** Professor; Ph.D. (University of Georgia)

**Monica Gaddis;** Associate Teaching Professor; Ph.D. (Indiana University)

**Mark Nichols;** Department Chair, Associate Professor; Ph.D. (Yale University)

**Stephen Simon;** Teaching Professor; Ph.D. (University of Iowa)

**Jared M. Bruce,** Professor, Ph.D. (Penn State University)

## Human Therapeutics

**Nicholas Norgard;** Associate Teaching Professor; Pharm.D. (University of Nebraska Medical Center)

## Humanities

**Brian Carter,** MD; Chair, Medical Humanities and Bioethics; M.D. (University of Tennessee)

## Internal Medicine

**John Spertus**; Professor; Daniel Lauer, M.D. Endowed Chair in Metabolism and Vascular Disease Research; M.D. (University of California)

## OB/Gyn

**Dev Maulik**; Senior Associate Dean For Women's Health; Chair, Department of Obstetrics and Gynecology and Professor; M.D. (University of Calcutta); Ph.D. (University of London)

**Gary Sutkin**; Associate Dean For Women's Health; Department of Obstetrics and Gynecology; Professor; M.D. (Northwestern University); M.B.A. (J.L. Kellogg Graduate School of Management)

## Ophthalmology

**Karl E. Kador**; Assistant Professor; Ph.D. (University of Nebraska - Lincoln)

**Peter Koulen**; Professor; Felix and Carmen Sabates Endowed Chair in Vision Research; Ph.D. (Johannes Gutenberg University)

## Orthopaedics

**Akin Cil**; Chair, Department of Orthopaedic Surgery and Professor; M.D. (Hacettepe University Faculty of Medicine); Franklin D. Dickson/Missouri Endowed Chair in Orthopaedic Surgery

## Pediatrics

**Mary Anne Jackson**; Dean, Professor; M.D. (University of Missouri – Kansas City School of Medicine)

## Graduate

### Graduate Degree Programs:

#### Masters of Science Degrees:

Master of Science in Anesthesia

Master of Science in Bioinformatics (<http://catalog.umkc.edu/colleges-schools/medicine/graduate-programs/master-of-science-program-bioinformatics/>)

Master of Medical Science Physician Assistant (<http://catalog.umkc.edu/colleges-schools/medicine/graduate-programs/master-of-medical-science-physician-assistant/>)

Master of Health Professions Education (<http://catalog.umkc.edu/colleges-schools/medicine/graduate-programs/master-of-health-professions-education/>)

#### Graduate Certificate Degrees:

Graduate Certificate in Clinical Research

Graduate Certificate in Health Professions Education (<http://catalog.umkc.edu/colleges-schools/medicine/graduate-programs/graduate-certificate-health-professions-education/>)

#### Doctor of Philosophy:

Interdisciplinary Ph.D. primary and co-discipline: Biomedical and Health Informatics (<http://catalog.umkc.edu/colleges-schools/graduate-studies/biomedical-health-informatics/>)

## Medical

### Medical Degree Programs:

Baccalaureate/M.D. Program (<http://catalog.umkc.edu/colleges-schools/medicine/medical-degree-programs/six-year-program-description/>)

M.D. Program (<http://catalog.umkc.edu/colleges-schools/medicine/medical-degree-programs/md-program/>)

For additional information about the above Medical Degree programs, please visit the website (<http://www.med.umkc.edu/prospective/>) or contact:

Kansas City, MO 64108  
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## Anesthesia Courses

ANESTH 5505 Anatomy for Anesthesiologist Assistants I Credit: 1

This course is designed to meet the needs of students seeking a Master of Science in Anesthesia degree at UMKC. A thorough understanding of anatomy provides a basic foundation for future coursework and for the profession of Anesthesiologist Assistant. This course covers gross anatomy from a regional (or systemic in some cases) perspective bringing together all body systems present in each defined area of study.

**Prerequisites:** Acceptance to the MSA program.

ANESTH 5506 Anatomy for Anesthesiologist Assistants II Credit: 1

In this course, students will learn anatomy that directly impacts clinical situations. Diagnostic skills will be enhanced through an understanding of radiologic tests, identification of common chest X-rays, and a basic understanding of transesophageal echocardiography. Students will learn to recognize the basic 4 chamber TEE views and diagnose the most common lesions and abnormalities in patients undergoing cardiac surgery. An ultrasound machine will be used to identify anatomy for a variety of clinical procedures, including intravenous line placement, central line placement, arterial line placement, and peripheral nerve block placement. Students will learn the principles of how to operate and manipulate the ultrasound monitor, and will learn the relevant anatomy and anesthetic implications and management for the most common peripheral nerve blocks used today. In addition, clinically significant anatomy case studies in anesthesia will be presented and discussed.

**Prerequisites:** Acceptance to the MSA program.

ANESTH 5518 Professionalism for the Anesthesiologist Asst I Credits: 0.5

Introduction to legal and ethical areas of Anesthesiologist Assistant practice; professional behavior, legal obligations of anesthetists and patient, and social and community contexts of health care.

**Prerequisites:** Acceptance to the MSA program.

ANESTH 5528 Professionalism for the Anesthesiologist Asst II Credits: 0.5

Special topics in Anesthesiologist Assistant practice; impact of substance abuse, cognitive deficiency and mental illness in creating an impaired provider.

**Prerequisites:** Acceptance to the MSA program.

ANESTH 5538 Professionalism for the Anesthesiologist Asst III Credits: 0.5

Special topics in Anesthesiologist Assistant practice; principles of evidence based medicine and approaches to mastering life long learning and maintaining professional competencies.

**Prerequisites:** Acceptance to the MSA program.

ANESTH 5540 Patient Monitoring and Instrumentation Credits: 3

This is a three credit hour course which integrates concepts of circuits and engineering with the clinical application of anesthesia instrumentation. To the extent possible, the material covered will be directly linked to clinical scenarios. In order for the monitors to be fully understood from a clinical management perspective, relevant physiology related to the monitors and to the field of anesthesia will be taught and practiced. In addition to the monitors, students will gain an in depth understanding of all parts of the anesthesia machine, anesthesia circuits, central line and arterial line equipment, and the properties of common intravenous and inhalational anesthetics.

ANESTH 5541 Methods of Anesthesia I Credits: 2

In this course, students will be prepared to give safe anesthesia in all types of cardiac surgery, learn how to interpret arterial blood gases, and obtain an in depth understanding of ACLS principles so that they will be prepared for any resuscitation scenario in the OR. A cardiac drug card will be administered. Videos and PPTs will be administered to help students understand the concepts of ACLS, acid base management, cardiac bypass, cardiac surgery monitoring, techniques, and anesthetic management.

**Prerequisites:** ANESTH 5540.

ANESTH 5548 Anesthesiologist Assistant Senior Seminar Credits: 0.5

This is 0.5 credit hour course taken in the final semester of the Master of Science in Anesthesia Program and is designed to prepare the student for their future roles. This course will prepare the student for the job market and placement and enforce the life-long learning needed within medical professions. The course will contain information on student loan payback, financial literacy after graduation, and leadership opportunities for the graduate. The course will also clinically update the students in basic life saving for the healthcare provider (BLS), advanced cardiac life saving (ACLS) and Pediatric advance life saving (PALS).

ANESTH 5556 Physiology for Anesthesiologist Assistants I Credits: 3

This course is the first of two parts of a human physiology series. The course is designed to provide an understanding of basic neurophysiology, autonomic nervous system, blood, respiratory and cardiovascular physiology. Topics of special interest to anesthesiologist assistants will be highlighted.

**ANESTH 5557 Physiology for Anesthesiologist Assistants II Credits: 2**

This course is the 2nd of two parts of a human physiology series. The course is designed to provide an understanding of endocrine, reproductive, neonatal, gastrointestinal, and neurophysiology. Topics of special interest to anesthesiologist assistants will be highlighted as it relates to the physiology.

**Prerequisites:** ANESTH 5556.

**ANESTH 5558 Anesthesia & Co-existing Disease I Credits: 2**

This course provides an essential anesthesia link to the basic anatomy and physiology classes in the Masters of Science in Anesthesia program. The content outline intentionally corresponds with and builds upon that of the Physiology for Anesthesiologist Assistants coursework. This course focuses on primary cardiac, respiratory and endocrine coexisting diseases that affect anesthetic care. It provides for the student a strategic plan in the management of patients with these disease processes.

**Prerequisites:** ANESTH 5556.

**ANESTH 5559 Anesthesia & Co-existing Disease II Credits: 2**

This is the second course that establishes an essential anesthesia link to the basic anatomy and physiology classes in the Masters of Science in Anesthesia program. The content outline intentionally corresponds with and builds upon that of the Physiology for Anesthesiologist Assistants coursework. This course focuses on a variety of coexisting diseases states but all focuses on pediatric and obstetric co-existing disease and how they affect anesthesia management.

**Prerequisites:** ANESTH 5558.

**ANESTH 5560 Introduction to Anesthesia Credits: 2**

Introduction to basic concepts dealing with clinical anesthesia. Medical terminology, human anatomy, medical chart interpretation and drug dosage calculations.

**ANESTH 5561 Orientation to Simulation and Clinical Application Credits: 5**

This skills based course is an introduction to the student's clinical experience in the operating room. The goal is to rapidly engage students in anesthesia patient care. Fundamental procedures and techniques used in administering anesthesia will be emphasized. Simulated clinical models are used to allow students to first practice anesthesia care in a safe, controlled, low pressure environment. Students are prepared for quality immersion into patient care. Operating room set up and etiquette, pre-operative assessment, IV placement techniques, airway management, intraoperative care, and postoperative management are emphasized. Course includes hands on introduction to the operating room and anesthetic management and students obtain 80-100 hours of clinical contact time.

**ANESTH 5563 Anesthesia Clinical Experience I Credits: 4**

During this course students gain clinical and professional experience in the operating room. In this course students are expected to perform program competencies with the level of assistance developed in the programs goals for skills development. Students will be one on one with a Certified Anesthesiologist Assistant or Anesthesiologist clinical supervisor while obtaining these goals. Students will complete a specific IV, pre-surgical testing and post anesthesia care unit rotation during their clinical experience courses.

**Prerequisites:** ANESTH 5561.

**ANESTH 5564 Anesthesia Clinical Correlation II Credit: 1**

This one credit course is designed to help students understand how to effectively research and apply current anesthesia journal articles, and to prepare for the NCCAA certification examination. The students will spend the entire semester studying 6 (Principles of anesthesia/ Instrumentation and monitoring, anesthesia delivery systems, physics / renal, genital urologic / respiratory system / clinical subspecialties) of the 16 topics that are included on the NCCAA certification examination. Homework will include submission of test questions based on their presentations and the 6 assigned NCCAA testing topics. The students will also receive an assignment to find and summarize a journal article from one of the 6 assigned topics. The students will cap off the semester with a clinical final examination, which includes submitted questions from assigned topics.

**Prerequisites:** ANESTH 5562.

**ANESTH 5565 Anesthesia Clinical Experience II Credits: 8**

During this course students gain clinical and professional experience in the operating room. In this course students are expected to perform program competencies with the level of assistance developed in the programs goals for skills development. Students will be one on one with a Certified Anesthesiologist Assistant or Anesthesiologist clinical supervisor while obtaining these goals. Students will complete a specific IV, pre-surgical testing and post anesthesia care unit rotation during their clinical experience courses.

**ANESTH 5567 Anesthesia Clinical Experience III Credits: 16**

Clinical clerkship component of program clinical phase. Students are in the operating room (OR) five days per week and through the combined clinical experience clerkships will receive extended exposure to all clinical subspecialties. Students complete 4 week or 8 week rotations at several hospitals to gain experience with general surgery, obstetrics, pediatrics, trauma surgery, neurosurgery, cardiovascular surgery, orthopedic surgery, intensive care unit and others. Students are expected to perform program competencies with the level of assistance developed in the programs goals for skills development. Students will be one on one with a Certified Anesthesiologist Assistant or Anesthesiologist clinical supervisor while obtaining these goals.

**Prerequisites:** ANESTH 5565, ACLS and PALS certification.

**ANESTH 5568 Anesthesia Clinical Correlation III Credit: 1**

This one credit course is designed to help students understand how to effectively research, apply, and prepare for the NCCAA certification examination. The students will spend the entire semester studying 4 (cardiovascular/ Hematology coagulation / Metabolism endocrine / Neurosciences neuromuscular) of the 16 topics that are included on the NCCAA certification examination. Homework will include submission of test questions based on the 4 assigned NCCAA testing topics. The students will cap off the semester with a clinical final examination, which includes submitted questions from the assigned topics. This course also includes a one week in person session where will identify risk management issues for anesthesia providers, learn key strategies when applying for a job and demonstrate key points of patient assessment in the ICU. Recertification for Basic Life Support (BLS) occurs during this course.

**Prerequisites:** ANESTH 5564.

**ANESTH 5569 Anesthesia Clinical Experience IV Credits: 12**

Clinical clerkship component of program clinical phase. Students are in the operating room (OR) five days per week and through the combined clinical experience clerkships will receive extended exposure to all clinical subspecialties. Students complete 4 week or 8 week rotations at several hospitals to gain experience with general surgery, obstetrics, pediatrics, trauma surgery, neurosurgery, cardiovascular surgery, orthopedic surgery, intensive care unit and others. Students are expected to perform program competencies with the level of assistance developed in the programs goals for skills development. Students will be one on one with a Certified Anesthesiologist Assistant or Anesthesiologist clinical supervisor while obtaining these goals.

**Prerequisites:** ANESTH 5567.

**ANESTH 5570 Anesthesia Clinical Correlation IV Credit: 1**

This one credit course is designed to help students understand how to effectively research and apply current anesthesia journal articles, and to prepare for the NCCAA certification examination. The students will spend the entire semester studying 6 (Peds the Neonatal Period / Pharmacology / Regional Anesthesia Pain Management/ GI Hepatic/ OB Perinatal Management) of the 16 topics that are included on the NCCAA certification examination. Homework will include submission of test questions based on their presentations and the 6 assigned NCCAA testing topics. The students will also receive an assignment to find and summarize a journal article from one of the 6 assigned topics. The students will cap off the semester with a clinical final examination, which includes submitted questions from assigned topics.

**Prerequisites:** ANESTH 5568.

**ANESTH 5571 Anesthesia Clinical Experience V Credits: 16**

Clinical clerkship component of program clinical phase. Students are in the operating room (OR) five days per week and through the combined clinical experience clerkships will receive extended exposure to all clinical subspecialties. Students complete 4 week or 8 week rotations at several hospitals to gain experience with general surgery, obstetrics, pediatrics, trauma surgery, neurosurgery, cardiovascular surgery, orthopedic surgery, intensive care unit and others. Students are expected to perform program competencies with the level of assistance developed in the programs goals for skills development. Students will be one on one with a Certified Anesthesiologist Assistant or Anesthesiologist clinical supervisor while obtaining these goals.

**Prerequisites:** ANESTH 5569.

**ANESTH 5573 Anesthesia Clinical Experience VI Credits: 16**

Clinical clerkship component of program clinical phase. Students are in the operating room (OR) five days per week and through the combined clinical experience clerkships will receive extended exposure to all clinical subspecialties. Students complete 4 week or 8 week rotations at several hospitals to gain experience with general surgery, obstetrics, pediatrics, trauma surgery, neurosurgery, cardiovascular surgery, orthopedic surgery, intensive care unit and others. Students are expected to perform program competencies with the level of assistance developed in the programs goals for skills development. Students will be one on one with a Certified Anesthesiologist Assistant or Anesthesiologist clinical supervisor while obtaining these goals.

**Prerequisites:** ANESTH 5571.

**ANESTH 5575 Pharmacology for Anesthesiologist Assistants I Credits: 2**

Basic concepts in pharmacology: principles of drug action, receptor theory, pharmacokinetics, pharmacodynamics and drug dose calculations. The course will emphasize the primary medications used to provide anesthesia and to support patients during the perioperative period.

**ANESTH 5576 Pharmacology for Anesthesiologist Assistants II Credit: 1**

This is a one credit hour course designed for the M.S. in Anesthesia Program. The course prepares students to apply knowledge of pharmacotherapy to anesthesia care by taking into account type of surgery and patient coexisting diseases.

**ANESTH 5577 Methods of Anesthesia II Credits: 3**

In this course, students will be prepared to manage anesthetics for more complex situations. Anesthetic management for certain patient conditions will include permanent implantable pacemakers, fluid electrolyte abnormalities, and congenital heart disease. Clinical management for individual patient populations will include obstetrics and pediatric advanced life support (PALS). In addition, clinically relevant information regarding advanced equipment and techniques will include 12 lead ECG interpretation, ultrasound guided peripheral nerve blocks, neuraxial anesthesia, and physics for anesthesiologist assistants.

**ANESTH 5578 Pharmacology for Anesthesiologist Assistants III Credits: 2**

This is a two credit hour course designed for the M.S. in Anesthesia Program. The course prepares students to apply knowledge of pharmacotherapy to anesthesia care by taking into account type of surgery and patient coexisting diseases.

**Prerequisites:** ANESTH 5575, ANESTH 5576.

**ANESTH 5585 Physiological Model-based Simulation I Credits: 2**

This is a two credit hour course, which utilizes physiological model-based simulation and procedure simulation to integrate anesthesia-associated basic science knowledge into a laboratory setting. The focus for this semester is designed to help student become proficient in central lines, pulmonary artery monitoring, epidural and spinal placement, and managing more complex anesthetic cases involving trouble shooting and crisis management via simulation. Advanced Cardiac Life Saving is obtained during this course.

**ANESTH 5586 Physiological Model-based Simulation II Credits: 2**

This is a two credit hour course, which builds upon the technical skills learned in ANES 5585. Students will be asked to manage complex anesthetic cases involving multiple co-existing diseases and methods of anesthesia. Pediatric Advanced Lifesaving Saving (PALS) is a certification required to be obtained during this course.

**Prerequisites:** ANESTH 5585.

**ANESTH 5590 Special Topic Credits: 0.5-3**

An opportunity to explore new topics or existing topics in greater detail and are not included in the usual course offerings.

## **Basic Medical Science Courses**

**BMS 5590 Special Topics Credits: 1-3**

An opportunity to explore new topics or existing topics in modified or greater detail; topics which are not included in the usual course offerings.

**BMS 9265 Human Biochemistry 1 - Medical Credits: 5**

Presents basic principles of human biochemistry. Addresses structure, function, biosynthesis, degradation and utilization of the major constituents of living systems. Employs an integrative approach to the basic science and clinical medicine aspects of normal and defective metabolism.

**BMS 9296 Human Structure Function I Credits: 6**

Part 1 of a 4 part series (January-February). Integrated course in anatomy, histology, embryology, physiology and biochemistry. This unit covers introductory principles and the musculoskeletal system.

**BMS 9297 Human Structure Function II Credits: 5**

Part 2 of a 4 part series (February-April). Integrated course in anatomy, histology, embryology, physiology and biochemistry. This unit covers cardiopulmonary and gastrointestinal systems.

**BMS 9298 Human Structure Function III Credits: 5**

Part 3 of a 4 part series (April-May). Integrated course in anatomy, histology, embryology, physiology and biochemistry. This unit covers urinary and reproductive systems.

**BMS 9300 Human Gross Anatomy I Credits: 5**

Regional study of the anatomy of the back, upper limbs, thorax, abdomen, and pelvis with emphasis on the biomedical applications of the anatomy studied.

**BMS 9301 Human Gross Anatomy II Credits: 5**

A continuation of BMS 9300. A systematic and regional study of the anatomy of the maxillofacial and anterior neck structures with emphasis on the biomedical applications of the anatomy studied.

**BMS 93065 Anatomy of the Head & Neck Credits: 2**

A regional approach to the study of the head and neck. Content will include a brief discussion of human anatomy and didactic information on the structures of the head and neck as they relate to the practice of dental hygiene.

**BMS 9308 Histology Credits: 2.5**

A motivative microanatomic study of the normal morphology of cells, tissues, organs and organ systems to stimulate the learning of terminology and basic cellular structure of the human body.

**BMS 9310 Medical Neurosciences Credits: 9**

Lecture-based course covering major neurological disorders and disease states. Specific neurologic diseases will be correlated to the didactic sessions by clinicians. Laboratory component is oriented around brain dissection sessions. Laboratory experience will demonstrate gross lesions and integrate the lesions with the clinical symptoms. A variety of supplemental audiovisual material also supports the class.

**Prerequisites:** BMS 9298.

**Co-requisites:** BMS 9399.

**BMS 9311 Medical Microbiology Credits: 5**

Covers basic scientific principles of virology, bacterial physiology and genetics. Presents information relevant to the pathogenesis of human infections caused by viruses, bacteria, fungi, protozoa and helminthes. Provides a concise presentation of basic immunological principles and their clinical relevance. Provides a concise review of antimicrobial therapeutic regimens including mechanism of action and clinical settings in which specific agents might be used. Utilizes case presentations to illustrate the manner in which reasonable differential diagnoses are developed and a rational approach toward empiric antimicrobial usage.

**BMS 9399 Human Structure Function IV Credits: 6**

Part 4 of a 4 part series (June-July). Integrated course in anatomy, histology, embryology, physiology and biochemistry. This unit covers the head and neck system.

**BMS 9701 Clinical Anatomy of Head and Neck Credits: 2-4**

This is an Advanced Head and Neck Anatomy course with an emphasis on clinical implications of anatomy. The emphasis of the course is not to maximize the number of facts the resident knows but rather to help the resident to understand a three-dimensional model that serves as the foundation to help them avoid treatment complications, recognize and treat pathology as well as effectively communicate oral and dental health issues to patients and colleagues.

**Health Professions Education Courses****HPRE 5500 Leadership and Administration in Health Professions Education Credits: 3**

Current approaches to academic leadership within the context of health professions education. Topics include management skills, problem solving, communication, group skills, motivation, managing conflict, and delegating. Attention to developing skill in presenting, interviewing and in facilitating meetings. Focus on application within the context of health professions education.

**HPRE 5508 Principles and Methods of Research Credits: 3**

Investigate the role and importance of quantitative, qualitative and mixed-methods research in the health professions. Primary goals are to develop the knowledge and skills to read and interpret educational research in the health professions and to develop a plan to conduct research projects.

**HPRE 5522 Curriculum Design in Health Professions Education Credits: 3**

Examination of the theory and strategies for the development, implementation, and evaluation of of curricula in health professions education. Focus on contextual factors, learner needs, current models, outcome-based approaches, leadership, and faculty development for design and delivery.

**HPRE 5530 Current Issues in Health Professions Education Credits: 3**

Consideration of the major social, historical, educational, professional, and cultural issues that affect health professions education today. Focus on investigation of various topics as linked to learning and teaching in the health professions. This course will provide the foundations for the Certificate in Health Professions Curriculum and Evaluation.

**HPRE 5535 Community Engagement in Education Credits: 3**

Provides a foundation grounded in examination of the forces and factors that shape successful community engagement projects associated with measurable outcomes. Students will apply education concepts in developing a project with community partners to identify needs and implement a health improvement project.

**HPRE 5540 Independent Study Credits: 1-3**

Focused readings and/or special research project in an area selected by the graduate student in consultation with the advisor.

**HPRE 5550 Assessment in Health Professions Education Credits: 3**

Focus on the design, implementation and evaluation of tools for assessing student learning and performance in health professions education. Consideration of validity, reliability, writing test items, survey design, checklists, observational assessment, simulations and rubrics. Emphasis on best practices, assessment challenges, and on the effective implementation of comprehensive assessment programs in health professions education.

**HPRE 5557 Culturally Competent Health Professions Education Credits: 3**

When implicit bias is neither recognized nor managed in health professions education, it can negatively impact students' future success in the field, as well as the health and well-being of the students' future patients. In the clinical realm, implicit bias refers to physicians and health professions students automatically stereotyping patients on the basis of race, gender, weight, disability, among other factors. Students gain competence in, creating inclusive learning environments, avoiding bias in curriculum and teaching practices, and developing assessment measures for curricular bias.

**HPRE 5560 Teaching in Health Professions Education Credits: 3**

Emphasis on learning and teaching theories and current research in health professions education as applied to instructional methods, delivery, learning contexts. Focus on individual differences, mentoring and tutoring, and on teaching in clinical, small group and large group situations.

**HPRE 5565 Simulation for Health Professions Education Credits: 3**

This course is designed to assist learners in developing the skills necessary to teach with simulation. Simulation is an educational methodology that leads to knowledge gains, which are transferrable to patient care settings. This course will focus on the core pedagogical principles and best-available evidence in simulation-based health professions education. The course is designed for adult learners with the goal of assisting each participant in expanding their existing knowledge base and learning to apply it in a meaningful way to everyday teaching and curriculum needs.

**HPRE 5566 Teaching about Culture and Health Credits: 3**

The course begins with a foundation in cultural competency for health profession educators including content about social determinants of health, health disparities and culturally appropriate care. Curriculum development and instructional design topics including small group facilitation, active learning, case-based learning, use of narrative and media, distance learning, debriefing and assessment are specifically tailored for teaching cultural competency in health professions education.

**Prerequisites:** HPRE 5560, HPRE 5522, HPRE 5550

**HPRE 5580 Program Evaluation in Health Professions Education Credits: 3**

Applied research as linked to program development and evaluation in health professions education. Topics include needs assessment, summative and formative evaluations, evaluation paradigms, methodologies, data collection, data analysis, reporting findings. This course is project-based.

**Prerequisites:** EDUC-R&P 5508.

**HPRE 5588 Learning Portfolio in Health Professions Education Credits: 1-3**

Learning Portfolio in Health Professions Education (HPRE) is an individualized course which provides the opportunity to document and reflect on academic and applied work related to the learning outcomes of the Master of Health Professions Education program. Students engage in a process of selection, documentation, reflection, and collaboration with the goal of developing deeper understandings regarding their educational development, accomplishments, and application. The course may be taken for 1-3 credit hours per semester, although the full three credit sequence is required.

**Prerequisites:** Enrollment in the Master's in Health Professions Education program.

**HPRE 5599 Summer Conference in Health Professions Education Credits: 3**

The Summer Conference in Health Professions Education provides an opportunity for second year students in the Masters in Health Professions Education program to design, deliver and assess a one day, "mini" conference for area health professions educators. Students will work collaboratively, under faculty guidance, to design objectives, organize resources, develop timelines, publicize, deliver and evaluate a conference designed to reflect a particular theme in health professions education. The conference will consist of educational research presentations, hands-on, skill-based workshops, consultations, and literature/resource dissemination. It will serve to showcase student accomplishments and skills and be open to the public.

**HPRE 5899 Required Graduate Enrollment Credit: 1**

Required enrollment for students who will graduate during a term when they are not enrolled in a course. Option for students who will complete assignments in order to be eligible for graduation.

## Medical Bioinformatics Courses

**MEDB 5501 Applied Biostatistics I Credits: 3**

This course is the first course in the Biostatistics sequence and is intended for students, physicians, and researchers. It introduces statistical concepts, analysis methods, and research designs for data commonly encountered in biological, clinical, and medical research. Topics include an introduction to SPSS, types of data, descriptive statistics, illustrative statistics, sampling, hypothesis testing, parametric and nonparametric analysis, correlation, linear regression, and graphic representation of data. Familiarity with basic statistics is not required. Statistical analyses involved in this course can be performed in SPSS or SAS. Students using SAS must have a working knowledge of SAS.

**Prerequisites:** graduate or professional students and an advanced math course (i.e. Calculus, statistics).

**MEDB 5502 Applied Biostatistics II Credits: 3**

The second in the Applied Biostatistics sequence and is intended for graduate, doctoral, and professional students in the biological, clinical and medical fields, and medical education. Statistical concepts, analysis methods, and research designs commonly used in these fields are included: diagnostic testing, hypothesis testing, power analysis, analysis of variance, analysis of covariance, multivariate analysis of variance, propensity scoring, simple and multiple regression, logistic regression, and survival analysis. Familiarity with basic statistics and the statistical techniques presented in Applied Biostatistics I is required. Statistical analyses involved in this course will be performed primarily using the SPSS statistical analysis package. The course will also cover the interpretation, presentation and the write up of analytical results and graphs.

**Prerequisites:** MEDB 5501.

**MEDB 5503 Biostatistics III-Mixed-Effects Models Credits: 3**

This course is the third in the Biostatistics sequence and is intended for students, physicians and researchers in the clinical, biological, and medical fields. The course builds on foundations of linear regression model and logistic regression model. It will cover hierarchical linear mixed model for normally distributed outcomes, and generalized linear mixed models for binary outcome, count data or liker scale outcome. The course offers step by step understanding of how to construct a model with random effect. Specifically, we cover model techniques to address data resulting from cluster randomized study, repeated measures and longitudinal study. Students will learn about these different mixed models and use SAS and R to perform the analyses. The course will also cover the presentation of analytical results and graphic representation of data.

**Prerequisites:** MEDB 5507, MEDB 5501, MEDB 5502.

**MEDB 5505 Introduction to R Credit: 1**

Provides a working familiarity with R. No advanced programming or statistical analytic skills, other than the ability to create and modify text files are needed. Basic methods for data import, data management, simple graphics, and basic statistical analysis are introduced. Provides student with a firm foundation to address these areas in advanced statistics classes or in the student's research efforts, including thesis/dissertation research. A basic understanding of statistical terminology and a working familiarity with computer-based data files (e.g., Excel) is necessary. A basic understanding of the concepts of computer coding is recommended.

**MEDB 5506 Introduction to SPSS Credit: 1**

Session provides a working familiarity with SPSS. Students are not expected to have advanced programming or statistical analysis skills, other than the ability to create and modify text files. Basic methods for data import, data management, simple graphics, and basic statistical analysis are introduced. This class will not cover advanced statistical methods, but will provide the student with a firm foundation to address these areas in advanced statistics classes or in the student's research efforts, including thesis/dissertation research. A basic understanding of statistical terminology and a working familiarity with computer-based data files (e.g., Excel) is necessary.

**MEDB 5507 Introduction to SAS Credit: 1**

Course provides a working familiarity with SAS. Students are not expected to have advanced programming or statistical analysis skills, other than the ability to create and modify text files. Basic methods for data import, data management, simple graphics, and basic statistical analysis are introduced. This class will not cover advanced statistical methods, but will provide the student with a firm foundation to address these areas in advanced statistics classes or in the student's research efforts, including thesis/dissertation research. A basic understanding of statistical terminology and a working familiarity with computer-based data files (e.g., Excel) is necessary.

**MEDB 5508 Introduction to SQL Credits: 2**

This course is an introduction to SQL programming. The course is designed to teach students basic skills that will prepare them to use SQL for data analysis.

**MEDB 5509 Machine Learning and Python in Health Sciences Credits: 3**

In the artificial intelligence (AI) era, health care systems and practices have made changes in the nature of their services. Students will learn the basic knowledge of machine learning (ML), the core AI approach, and how to implement ML projects using Python, the most powerful programming language for ML. This is an introductory course for beginners to obtain practical knowledge and skills in ML and Python programming. The scope of ML techniques is limited to the most widely used basic methods, especially those of supervised learning.

**Prerequisites:** Basic Statistics

**MEDB 5510 Clinical Research Methodology Credits: 3**

This course trains the student to contribute to research design, planning, and implementation, and to manage and interpret health-related data. This course will provide a broad overview of clinical research in terms of definition, methodology, conduct and applications. The course will explore basic elements of clinical research including the hierarchy of clinical research design and the conduct of clinical research. Course topics include: conceiving the research question; study designs; questionnaire construction; research methodology; research ethics; human subjects requirements; the role of statistical analysis in clinical research; research proposal preparation; and research based on analysis of secondary data.

**MEDB 5511 Principles and Applications of Epidemiology Credits: 3**

This course will provide an introductory overview of the principles of epidemiology and illustrate applications in specialized topic areas. Course lectures will introduce measures of effect used to study disease in human populations, epidemiological study designs, concepts of causal inference, and threats to study validity. Specialized lectures will demonstrate the application of these concepts in select health and disease conditions.

**MEDB 5512 Clinical Trials Credits: 3**

Clinical Trials explores the knowledge and skills required to conduct clinical trials, and implications of clinical trials on practice in medicine and allied health.

**MEDB 5513 Overview of Health Services Research Credits: 3**

Provides an overview of the U.S. health care and public health systems including issues about cost, access, and quality of health care. This course focuses on the role of research and information in the process of redesigning of health care delivery in the U.S. for the purpose of improving the value of health services.

**Prerequisites:** MEDB 5501, MEDB 5510 or MEDB 5511.

**MEDB 5514 Human Genome Epidemiology Credits: 3**

Designed for biological researchers and clinicians interested in studying common human diseases using state of the art genomics/genetics epidemiological approaches. Comprehensive introduction to concepts and methodologies of quantitative/statistical genetics, emerging technologies and analytical methods for genomic science, basic study design, utilization of software packages for analyses of genomic data, successful examples of using human genome epidemiology information to improve health, and ethical, legal and social issues in the design and conduct human genome epidemiology research.

**MEDB 5520 Introduction to Medical Informatics Credits: 3**

This course provides an overview of Biomedical and Health Informatics. It describes the use of data, information and knowledge in improving healthcare and biomedical research. This includes the use of technology and computers to store, retrieve, and process data. Topics include clinical decision making, standards and clinical terminology, natural language processing, imaging, electronic health records, patient monitoring, consumer health informatics, public health informatics, clinical decision support, bioinformatics, translational bioinformatics and clinical research informatics.

**MEDB 5521 Clinical Bioinformatics Credits: 3**

Clinical bioinformatics will provide the foundation required for effective communication between computational, biological and clinical experts. This class uses a series of exercises to enable participants to independently perform gene and protein-based bioinformatics queries and analyses. Throughout the course, core biological principles are explained, as are the foundational technology and computational topics. Students will become proficient with public bioinformatics resources. This course will prepare students to apply the techniques to their research or participation in interdisciplinary clinical terms.

**MEDB 5525 Social Determinants of Health Credits: 3**

This course will describe how social, economic and political factors affect health. It will examine strategies to address social determinants of health to reduce health inequities. Students will explore how specific social determinants like socioeconomic status, race ethnicity, and lifestyle influence health, use a "life course" approach to look at different stages of life and the effect of social determinants on specific populations.

**MEDB 5530 Independent Study I Credits: 1-3**

Focused readings and/or special research project in an area selected by the graduate student in consultation with the advisor.

**MEDB 5531 Independent Study II Credits: 1-3**

Focused readings and/or special research projects in an area selected by the graduate student in consultation with the advisor.

**MEDB 5535 Quantitative Aspects of Epidemiologic Research Credits: 3**

This course offers students advanced training in the analysis of epidemiological data. Topics include application of common measures of frequency and association, confounding, effect modification, bias, misclassification, and sensitivity analysis in epidemiologic and clinical data sources.

**Prerequisites:** MEDB 5501, MEDB 5502 and one of the following: MEDB 5510 or MEDB 5511

**MEDB 5540 Multidisciplinary Graduate Seminar Credit: 1**

This course is a weekly seminar presented by the Department of Biomedical and Health Informatics. Internal and external guest speakers will present current topics in biomedical and health informatics. Four Journal Clubs are also a component of this course where students and faculty read, assess, present, and discuss selected readings related to biomedical and health informatics and clinical research. The seminar is designed to update students of the department on current topics and to assist students in the development of critical skills for evaluating published research, designing research projects, and communicating research findings.

**MEDB 5550 Health Outcomes Seminar Credit: 1**

The course content is guided by a series of seminars presented by researchers who are actively engaged in health outcomes studies. It explores multiple topics that are unique relevant to clinical investigators. Faculty and peer discussion forums highlight key concepts and applications.

**MEDB 5560 Medical Decision Making Credits: 3**

This course will introduce the concept of medical decision making under uncertainty through an examination of disease probabilities and how they are altered by the characteristics of the diagnostic test being studied or used clinically. Decision trees will be introduced as a mechanism for communicating complex medical decisions and introductory level decision analysis will be presented. The measurement of patient values for alternative outcomes will be introduced as they pertain to direct payoff values as well as modifiers to cost payoffs.

**MEDB 5561 Responsible Conduct of Research Credits: 3**

An interdisciplinary course which covers principles and day-to-day practicalities of research ethics, information about regulatory requirements for conducting research including safety issues and the use of humans, animals and radioactive biohazardous materials; discuss current issues in the ethical aspects of research, such as scientists' obligations with respect to public policy and advocacy.

**MEDB 5563 Implementation Science in Health Credits: 3**

This course in Implementation and dissemination sciences addresses a multidisciplinary set of theories and methods to improve and expedite translating research evidence to everyday health-related practices and communities. These theories and methods are systematic approaches to understanding how healthcare interventions can be better integrated into diverse practice settings and emphasize direct engagement with institutions and communities where health interventions take place. To optimize public health goals, this course will present the best evidence-based interventions, how to create those interventions, and how to best ensure that these interventions are effectively delivered within clinical and community practice.

**MEDB 5573 Biostatistical Consulting Practicum Credits: 2-4**

This course is designed to provide students with an opportunity for statistical consulting training. Students will work on real consulting projects that were received through the Research and Statistical Consult Service. Projects may involve sample size calculation, study design, data analysis, generating statistical reports and manuscripts. Student will be able to apply their statistical knowledge and communication skills while learning how to work with other researchers.

**Prerequisites:** MEDB 5501, MEDB 5502, MEDB 5507 and MEDB 5503.

**MEDB 5589 Special Topics Credits: 1-3**

An opportunity to explore in depth topics not included in usual course offerings. One or more topics will be announced in advance of registration.

**MEDB 5591 Internship I Credits: 1-3**

Opportunity to apply knowledge and skills in clinical, computational, or genomics research and gain insight into potential career options. Students develop appreciation for teamwork and commitment in professional environments.

**Prerequisites:** MEDB 5501, MEDB 5502, MEDB 5510, MEDB 5513.

**MEDB 5592 Internship II Credits: 1-3**

Opportunity to apply knowledge and skills in clinical, computational, or genomics research and gain insight into potential career options. Students develop appreciation for teamwork and commitment in professional environments. Internship II is applicable to students who have previously completed 3 hours of internship.

**Prerequisites:** MEDB 5501, MEDB 5502, MEDB 5510, MEDB 5513, MEDB 5591.

**MEDB 5595 Capstone Experience Credits: 3**

This course is designed for the non-thesis student to demonstrate that they have mastered key learning objectives expected of the graduating master's student in the Clinical Research emphasis area. After completion of the core courses in the Masters of Bioinformatics curriculum, students will apply their learning to developing, implementing and presenting results from a project that demonstrates integration of the knowledge, abilities and values emphasized in the degree program.

**MEDB 5599 Research and Thesis Credits: 1-6**

Research for thesis.

**MEDB 5696 Pre-Dissertation Research Credits: 1-6**

This course is individually directed research leading to the preparation of a doctoral dissertation.

**Prerequisites:** Permission of the instructor.

**Co-requisites:** Completion of comprehensive exam.

**MEDB 5699 Research and Dissertation Credits: 1-12**

Research and dissertation preparation for IPhD degree students participating in Biomedical and Health Informatics primary and co-discipline.

**Prerequisites:** instructor approval

**MEDB 5899 Required Graduate Enrollment Credit: 1**

## Medicine Courses

**MEDICINE 9110 Fundamentals of Medical Practice I Credits: 5**

Introduces students to professional values, attitudes and skills required to practice medicine competently. Develops student competence in basic communication, relationship-building and patient centered interviewing skills. Provides self-awareness and personal growth strategies that facilitate the acquisition of professional behavior affecting honesty and integrity, compassion and altruism, as well as the management of stress. Explores non-biological factors influencing health and the appreciation of different value systems and life styles. Promotes ethical considerations relating to professional behavior and student conduct as a forerunner to professional behavior. Emphasizes the team approach in solving medical problems through direct small group activities as part of weekly onsite docent experiences. Integrates patient interviews and examinations with sciences fundamental to clinical medicine.

**MEDICINE 9115 Medical Terminology Credit: 1**

1 credit hour/twice weekly each semester. Methodical introduction to the language of medicine and its usage in modern clinical documentation. Introduces word elements in a logical, graduated sequence correlated with laboratory practice. Encourages skills in etymological analysis based on the word elements presented to facilitate interpretation of composite medical terms.

**MEDICINE 9120 Fundamentals of Medical Practice II Credits: 5**

Introduces students to professional values, attitudes and skills required to practice medicine competently. Develops student competence in basic communication, relationship-building and patient centered interviewing skills. Provides self-awareness and personal growth strategies that facilitate the acquisition of professional behavior affecting honesty and integrity, compassion and altruism, as well as the management of stress. Explores non-biological factors influencing health and the appreciation of different value systems and life styles. Promotes ethical considerations relating to professional behavior and student conduct as a forerunner to professional behavior. Emphasizes the team approach in solving medical problems through direct small group activities as part of weekly onsite docent experiences. Integrates patient interviews and examinations with sciences fundamental to clinical medicine.

**MEDICINE 9210 Fundamentals Of Medical Practice III Credits: 5**

5 credit hours, 3 hours per week onsite, 2 hours lecture. Reinforces important concepts in diversity and professionalism. Continues the team approach in solving medical problems through direct small group activities as part of weekly onsite docent experience.

**MEDICINE 9220 Fundamentals Of Medical Practice IV Credits: 5**

5 credit hours, 3 hours per week onsite, 2 hours lecture. Reinforces important concepts in diversity and professionalism. Continues the team approach in solving medical problems through direct small group activities as part of weekly onsite docent experiences. Integrates patient interviews and examinations with sciences fundamental to clinical medicine, including biochemistry, anatomy, physiology, biochemistry and social sciences. Exposes students to a series of interviews with seasoned professionals who address issues of professionalism and career development.

**MEDICINE 9221 Clinical and Research Experience Credit: 1**

This course offers experiences to teach the roles of the modern physician, including clinical team participation, research, community health, and advocacy. First, students will be introduced to varying types of medical research and data analysis. Additionally, by promoting the understanding of roles in patient care, students will learn to communicate effectively among health care professionals, assist with non-physician duties, and comprehend the structure of hospital authority. Lastly, through these skills, students will learn how to understand local health-related concerns and practice advocacy appropriately within their professional and personal communities. [1 Credit Hour]

**MEDICINE 9308 Clinical Practice of Medicine I Credits: 3**

Basic communication/clinical examination skills will be taught in the classroom with skills workshops. Students will learn to enhance their communication skills with patients and their families aligned with a systems-based approach to the physical examination. Students will also begin to practice complaint-based histories and a review of systems to prepare them for their Year 3 Continuing Care Clinic Clerkship and clinical decision-making. Students will practice communication and interpersonal skills in small groups and also have the opportunity to practice examination skills in workshops, with standardized patients, and linked to their experiences in the Continuing Care Clinic clerkship.

**Prerequisites:** Successful completion of HSF III, and enrollment in HSF IV.

**MEDICINE 9309 Clinical Practice of Medicine II Credits: 5**

Advanced communication/physical examination skills will be taught in the classroom with communication skills workshops. Students will learn/practice skills to communicate/examine patients aligned with a systems-based pathophysiology approach. Students will learn/practice a complaint-based HP exam by system aligned to their objectives in the Pathology II: Pathophysiology course. Students will learn/develop skills in clinical diagnosis and decision-making by system that includes instruction/practice on more advanced physical examination skills. Students will practice communication and interpersonal skills in small groups and also have the opportunity to practice examination skills in workshops, with standardized patients, and linked to their experiences in the Continuing Care Clinic.

**Prerequisites:** Successful completion of HSF III, and enrollment in HSF IV.

**MEDICINE 9310 History of Medicine Credit: 1**

In this course students will learn the ways disease has altered history and that conceptions of disease undergo constant change. Topics covered include diseases and their relationships to other medical sciences, as well as the historical and scientific developments which led to our present understanding of diseases and medicine.

**MEDICINE 9312 Pathology I: General Pathology, Genetics, and Immunology Credits: 10**

Students will learn and be able to apply basic science education in the clinical practice of medicine. This application includes the areas of gross and microscopic anatomy, biochemistry, genetics, pathophysiology, and immunology. Students will develop a basic understanding of laboratory tests. They will develop competency in clinical diagnosis based on pathologic findings related to anatomic pathology, laboratory medicine and pathophysiology. Course materials will also cover prevention of disease and disability, global health issues, forensic medicine and pathology, age and gender-related issues in pathology and medicine, and appropriate utilization of Pathology and Laboratory Medicine Services.

**MEDICINE 9313 Pathology II: Systems-Based Pathology and Pathophysiology Credits: 11**

Students will learn and apply basic science education in the clinical practice of medicine through systems-based teaching about disease. This application includes the areas of biochemistry, genetics, pathophysiology, and medical microbiology. Students will expand their understanding of basic laboratory tests with a focus on interpretation and gain familiarity with more complex or specialized laboratory tests, enhancing their abilities in test selection and interpretation. They will also begin to approach a multi-system health problem in terms of its pathogenesis, the mechanisms of systemic interactions, and consequent/subsequent potential complications. Content areas emphasized include cardiovascular, lymphatic, hematologic, gastrointestinal, renal, hepatic, and genitourinary systems.

**MEDICINE 9383 Continuing Care Clinic Credits: 0-5**

Provides ambulatory and continuous care experience in general medicine clinics. The docent teams are assigned to a clinic in which students see and follow a panel of patients on a continuous basis for up to four years, where necessary, under the supervision of docents. Provides continuity of care from inpatient hospitalization to outpatient care, allowing longitudinal experience for the student and personalized care for the patients. Allows students to observe the natural progression of disease and experience the rewards and challenges of an ongoing doctor-patient relationship.

**MEDICINE 9385 Introduction to Pharmacology Credits: 2**

Consists of self-paced, independent learning, computer-based instruction. Introductory principles of pharmacology are covered that provide students with basic knowledge and skills necessary for upcoming didactic and clinical curriculum. Students become familiar with drug information resources, pharmaceutical calculations, and prescription writing skills, and learn basic mechanisms of drug action, preventive therapeutics and pharmacokinetic principles.

**MEDICINE 9387 Extended Clinic I Credits: 0-5****MEDICINE 9390 Clinical Correlations Credits: 5**

5 credit hours. Case-based discussions provided by clinicians that serve to reinforce basic science concepts provided during BMS 9296, BMS 9297, and BMS 9298.

**MEDICINE 9401 Internal Medicine/Docent Instruction Yr 4 Credits: 10**

Students spend this eight-week rotation on the medical wards, each working as a integral member of a docent team that includes the docent, residents and attending health care staff. Year 3 and 5, and Year 4 and 6 students are paired together in a junior-senior partnership. Rounds, conference and consultations.

**MEDICINE 9401BR Internal Medicine/Docent Instruction Yr 4 Credits: 5**

Students spend this eight-week rotation on the medical wards, each working as a integral member of a docent team that includes the docent, residents and attending health care staff. Year 3 and 5, and Year 4 and 6 students are paired together in a junior-senior partnership. Rounds, conference and consultations. This section is a single four-week block of the rotation.

**MEDICINE 9408 Pharmacology Credits: 10**

Introduces the study of the interaction of drugs with biological systems. Provides the medical student with relevant basic pharmacology of the model drugs under clinical investigation and in use today. Includes extensive small group activities.

**MEDICINE 9471 Family Medicine Credits: 5**

Exposes students to the unique specialty that focuses on the family. Students experience the act of medicine as well as science, working with patients in the context of their family and community. Includes care of the child, the adolescent, pregnant women, young and middle aged adults, and the elderly. Addresses ambulatory medicine, prevention and health maintenance.

**MEDICINE 9472 Behavioral Science in Medicine Credits: 5**

Teaches the basic taxonomy, assessment methods and treatment interventions of chemical dependence and major psychiatric disorders. Serves as preparation for the psychiatry rotation. Examines relevant ethical issues commonly faced in current medical practice. Utilizes case studies and a problem-centered approach in addition to clinical experience including home health care visits, supervised interviewing, and time on an inpatient chemical dependency unit. Challenges the student to achieve an integrated theoretical understanding of various approaches in behavioral sciences as a background for meeting patients needs. Teaches communication skills including education of older patients.

**MEDICINE 9482 Patient, Physician, Society I Credits: 2**

Introduces students to a 7-week unit emphasizing medical decision making. Introduces students to a 6-week unit which focuses on public health. Activities include lecture, problem sets, small group projects.

**MEDICINE 9483 Continuing Care Clinic Credits: 0-5**

Provides ambulatory and continuous care experience in general medicine clinics. The docent teams are assigned to a clinic in which students see and follow a panel of patients on a continuous basis for up to four years, where necessary, under the supervision of docents. Provides continuity of care from inpatient hospitalization to outpatient care, allowing longitudinal experience for the student and personalized care for the patients. Allows students to observe the natural progression of disease and experience the rewards and challenges of an ongoing doctor-patient relationship.

**MEDICINE 9483RC Year Four Repeat Clinic Credits: 5**

**Prerequisites:** MEDICINE 9383.

**MEDICINE 9484 Patient, Physician, Society II Credits: 2**

Introduces students to a unit emphasizing medical ethics and palliative care. Activities include lecture, small group sessions, and assigned readings.

**MEDICINE 9485 Ambulatory Care Pharmacology Credits: 2**

Consists of a self-paced, independent learning, computer-based instruction. Focuses on integration of patient-related data with basic science data. Students obtain skills in assessing patient risk or disease staging and selecting appropriate pharmacotherapy based on such information. The selected topics focus on outpatient pharmacotherapy of common disease states for which there are established treatment guidelines, such as hypertension, heart failure, diabetes mellitus, asthma, pain, and hyperlipidemia.

**MEDICINE 9487 Extended Clinic II Credits: 5****MEDICINE 9500 Longitudinal Integrated Clerkship Credits: 20**

The Longitudinal Integrated Clerkship (LIC) is a unique training experience required for students at the St. Joseph campus of the University of Missouri – Kansas City School of Medicine. The LIC provides an opportunity for students to develop a multitude of competencies in the setting of a rural primary care practice. Students will learn medicine through a patient-centered model of care that allows the student to engage with the entire health care system to fully understand a multi-disciplinary approach to “whole-illness” management.

**MEDICINE 9501 Internal Medicine/Docent Instruction Yr 5 Credits: 10**

Students spend this eight-week rotation on the medical wards, each working as an integral member of a docent team that includes the docent, residents and attending health care staff. Year 3 and 5, Year 4 and 6 students are paired together in the junior-senior partnership. Rounds, conference and consultations.

**MEDICINE 9501BR Internal Medicine/Docent Instruction Yr 5 Credits: 5**

Students spend this eight-week rotation on the medical wards, each working as a integral member of a docent team that includes the docent, residents and attending health care staff. Year 3 and 5, and Year 4 and 6 students are paired together in a junior-senior partnership. Rounds, conference and consultations. This section is a single four-week block of the rotation.

**MEDICINE 9503 Pediatrics Rotation Credits: 10**

This eight-week rotation is designed to help students master the skills necessary in assessing normal and abnormal development and behavioral variation in the newborn, infant and child in the outpatient clinical setting. History-taking and physical examination of infants, children and adolescents are emphasized.

**MEDICINE 9503BR Peds Rotation Credits: 5****MEDICINE 9505 General Surgery Rotation Credits: 10**

Introduces students to the field of general surgery. Emphasizes the indications, contraindications, types of operative management, and the mortality and morbidity of various operations. Involves the student in several different kinds of learning experiences, such as preoperative and postoperative care, work in the operating room, outpatient clinic visits, night call, student conferences and resident conferences. Covers skills in surgical scrub, putting on gown and gloves, knot tying, vena puncture, proctoscopy, and suturing of the skin. Students assist in performing skills such as insertion of CVP catheters, insertion of a chest tube, thoracentesis, paracentesis and Swan-Ganz catheters.

**MEDICINE 9506 Obstetrics-Gynecology Rotation Credits: 10**

Provides the student with an opportunity to gain basic competence in obstetrics and gynecology, including proficiency in the history and physical examination related to the obstetric and gynecologic patient. Emphasizes outpatient gynecology, family planning and techniques for early detection of gynecologic cancer. Provides basic information in reproductive physiology and endocrinology, infertility, gynecologic oncology, and the psychological aspect of diseases of women. Covers concepts of prenatal care and fundamentals of normal labor and delivery, and pregnancy complications.

**MEDICINE 9506BR Obset-Gynecol Rotation Credits: 5****MEDICINE 9514 Medicine, War & Bioethics Credits: 5**

This course considers the continually evolving relationship between medicine, war, and the arts, from the slaughter of the American Civil War (1861-65) to today's conflicts in Iraq. Our focus is on the extraordinary difficult medical and ethical decisions faced by physicians in times of war, and the ways in which those experiences are reflected in the arts. Topics include the effects of disease on armies, biological warfare, the development of ambulance and hospital services in the Civil War, battlefield medicine, the diagnosis and treatment of shellshock victims in WWI, chemical warfare, the pioneering of plastic surgery, triage techniques in WWII, nuclear warfare, and the personal experiences of physicians in the Vietnam and Iraq wars.

**MEDICINE 9515 Medicine and Music Credits: 5**

This course will explore ways in which music and medicine interact, including the following topics: therapeutic applications of music (music therapy), current research on how the brain processes music, the treatment of medical themes (including illness and disease, patients, physicians, and human experimentation) in musical works, and how certain composers' medical conditions affected their creative output.

**MEDICINE 9515A1 Independent Readings Month Credits: 0-5**

Independent Readings Month

**MEDICINE 9516 Medicine and Film Credits: 5**

Movies are narratives that record, instruct, motivate, entertain and transform. This course investigates the ways in which physicians, patients, and medical students have been portrayed in Hollywood films over the course of the twentieth and the early twenty-first centuries. Compassion, idealism, and heroism were common traits in early doctor movies but there was also a recurrent theme of the greedy callous doctor who valued research over patient welfare, and profits over ethics. We discuss how films reflected, changed, and molded perceptions of physicians and patients in the past, and examine what contemporary portrayals of the medical profession can tell us about the expectations and fears of patients today.

**MEDICINE 9517 Medicine and Literature Credits: 5**

The aim of this course is to engage students in the process of self-reflection about their roles as health care professionals through the lens of literature. Reading about the ways in which people interact with professionals, patients, and disease can enrich our understanding of cultural, economic, and social issues. Medical literature is a diverse field and it increases our awareness of the different reactions to medicine and illness. This course is intended to improve our empathy for patients and peers.

**MEDICINE 9518 Medicine, Law and Bioethics Credits: 5**

This course provides the basic doctrines and principles of the law that form the foundation for legally and ethically sound medical practice. It includes the comprehensive coverage of the history of legal medicine in the United States and the dynamics of law applied to the practice of medicine. Current developments in the U.S. health care delivery and in the field of bioethics are identified along with the impact on practice of medicine. Lecture, discussion, and writing about legal and ethical issues related to the practice of medicine prepares students in Year 5 and Year 6 to assume the legal and ethical responsibilities of the M.D. degree. This course fulfills the requirement for a Medical Humanities course in year 5 or year 6.

**MEDICINE 9519 Medicine and Philosophy Credits: 5**

The class is constructed on three premises. First, everyone is a philosopher. Second, philosophy is not passive, it is an activity. In class, we will do philosophy. Students will be given some basic philosophic tools and they will then be asked to critically examine, refine and sharpen their thinking. Third, the practice of medicine requires critical and creative thinking. Students must acquire voluminous knowledge and information. Philosophy addresses wisdom, how to apply the knowledge and information wisely.

**Prerequisites:** Must be a professional student in the UMKC School of Medicine.

**MEDICINE 9570 Family Medicine Preceptorship Credits: 5**

Provides work experience with a rural Missouri physician. Helps students understand the responsibilities and importance of family physicians in the provision of health care. Provides continuing emphasis on the need for and importance of family practice.

**MEDICINE 9571 Psychiatry Rotation Credits: 5**

Gives each medical student a clinical assignment that involves responsibility for patient care under supervision on the adult inpatient service and experience in the clinic. Includes seminars in psychopathology, psychiatric syndromes, mechanisms of defense, psychopharmacology, drug and alcohol abuse and specific psychosocial assessment.

**MEDICINE 9578 Medicine and Art Credits: 5**

Lecture, discussion.

**MEDICINE 9583 Continuing Care Clinic Credits: 0-5**

Provides ambulatory and continuous care experience in general medicine clinics. The docent teams are assigned to a clinic in which students see and follow a panel of patients on a continuous basis for up to four years, where necessary, under the supervision of docents. Provides continuity of care from inpatient hospitalization to outpatient care, allowing longitudinal experience for the student and personalized care for the patients. Allows students to observe the natural progression of disease and experience the rewards and challenges of an ongoing doctor-patient relationship.

**MEDICINE 9583RC Year Five Repeat Clinic Credits: 5**

Monthlong course in which students repeat or complete outstanding requirements of Year 5 Continuing Care Clinic.

**MEDICINE 9585 Prescribing for Special Populations Credits: 2**

Consists of a self-paced, independent learning, computer-based instruction. Teaches principles of prescribing for special populations. Students learn to recognize special patients and to assess risks and benefits and individualize drug therapy in special patient situations. The course addresses concepts of pharmacology in five commonly-encountered special populations: pediatrics, elderly, patients with liver or kidney disease, and pregnant or breast-feeding patients.

**MEDICINE 9587 Extended Clinic III Credits: 5****MEDICINE 9594 Medicine and Body Image Credits: 5**

Lecture, discussion, writing about ethical issues related to death.

**MEDICINE 9601 Internal Medicine/Docent Instruction Yr 6 Credits: 10**

Students spend this eight-week rotation on the medical wards, each working as an integral member of a docent team that includes the docent, residents and attending health care staff. Year 3 and 5, and Year 4 and 6 students are paired together in a junior-senior partnership. Rounds, conference and consultations.

**MEDICINE 9601BR Internal Medicine/Docent Instruction Yr 6 Credits: 5**

Students spend this eight-week rotation on the medical wards, each working as an integral member of a docent team that includes the docent, residents and attending health care staff. Year 3 and 5, and Year 4 and 6 students are paired together in a junior-senior partnership. Rounds, conference and consultations. This section is a single four-week block of the rotation.

**MEDICINE 9678 Emergency Medicine Credits: 5**

Emphasizes principles, concepts and skills necessary for the initial evaluation and care of medical and surgical emergencies. Teaches management of simple lacerations, burns, contusions, sprains, and infections, and recognition of life threatening emergencies and initiation of emergency care in response.

**MEDICINE 9683 Continuing Care Clinic Credits: 0-5**

Provides ambulatory and continuous care experience in general medicine clinics. The docent teams are assigned to a clinic in which students see and follow a panel of patients on a continuous basis for up to four years, where necessary, under the supervision of docents. Provides continuity of care from inpatient hospitalization to outpatient care, allowing longitudinal experience for the student and personalized care for the patients. Allows students to observe the natural progression of disease and experience the rewards and challenges of an ongoing doctor-patient relationship.

**MEDICINE 9685 Rational and Safe Drug Prescribing Credits: 2**

Consists of self-paced, independent learning, computer-based instruction. Teaches principles of clinical pharmacology that will assist the student in responsibly prescribing medications. Students develop skills in making informed clinical decisions through studying topics such as literature evaluation, medication errors, adverse drug reactions, drug allergies, drug interactions, overdose management, alternative therapies, and therapeutic drug monitoring.

**MEDICINE 9687 Extended Clinic IV Credits: 5****MEDICINE 9714A2 Step Exam Board Preparation Credits: 5****MEDICINE 9715A1 Independent Readings Month Credits: 5****MEDICINE 9716A1 Independent Study Month Credits: 5****MEDICINE 9732 Academic-Biomedical and Health Informatics Credits: 5****MEDICINE 9816C11 Family Practice Sub-Internship Credits: 5**

Sub-internship in Family Medicine

**MEDICINE 9818-C11 Special Topics - Community and Family Medicine Credits: 5**

Special Topics - Community and Family Medicine

**MEDICINE 9818-C21 Special Topics - Internal Medicine Credits: 5**

Special Topics - Internal Medicine

**MEDICINE 9818-C31 Special Topics - Neurology/Psychiatry Credits: 5**

Special Topics - Neurology/Psychiatry

**MEDICINE 9818-C41 Special Topics-OB/GYN REI SUB-I Credits: 5**

Special Topics-OB/GYN REI SUB-I

**MEDICINE 9818-C51 Special Topics - Pathology Credits: 5**

Special Topics - Pathology

**MEDICINE 9818-C61 Special Topics - Pediatrics Credits: 5**

Special Topics - Pediatrics

**MEDICINE 9818-C71 Special Topics - Radiology Credits: 5**

Special Topics - Radiology

MEDICINE 9818-C81 Special Topics - Surgery Credits: 5  
Special Topics - Surgery

MEDICINE 9818-C91 Special Topics - Miscellaneous Credits: 5  
Special Topics - Miscellaneous

MEDICINE 9818-C92 Special Topics - Miscellaneous Credits: 5  
Special Topics - Miscellaneous

**Prerequisites:** SOM Student

MEDICINE 9842-C21 Internal Medicine Sub-Internship Credits: 5

MEDICINE 9850-C31 Neurology Sub-Internship Credits: 5

MEDICINE 9852 Neurology Intensive Care Credits: 5  
Intensive care in Neurology

**Prerequisites:** Must be a School of Medicine student.

MEDICINE 9870C41 Obstetrics and Gynecology - Sub-Internship Credits: 5  
Obstetrics and Gynecology - Sub-Internship.

MEDICINE 9898-C61 Internal Medicine/Pediatrics-Sub-Internship Credits: 5  
Internal Medicine/Pediatrics-Sub-Internship.

**Prerequisites:** Successful completion of the core Internal Medicine and Pediatrics clerkships.

MEDICINE 9899-C61 Internal Medicine Pediatrics Clinic Credits: 5

MEDICINE 9921-C61 Pediatrics Sub-Internship Credits: 5  
Pediatrics Sub-Internship.

MEDICINE 9922-C61 Neonatal Intensive Care Sub-Internship Credits: 5

MEDICINE 9923-C61 Pediatrics-Rehabilitation Credits: 5

MEDICINE 9924-C61 Pediatrics-Dermatology Credits: 5

MEDICINE 9925-C61 Pediatrics-Ophthalmology Credits: 5

MEDICINE 9926-C61 Pediatrics-Genetics Credits: 5

MEDICINE 9927-C61 Pediatrics-Neurology Credits: 5

MEDICINE 9928-C61 Pediatrics-Child and Adolescent Psychiatry Credits: 5

MEDICINE 9929-C61 Pediatrics-Plastic Surgery Credits: 5

MEDICINE 9930-C61 Pediatrics-Orthopedic Surgery Credits: 5

MEDICINE 9940-C61 Pediatrics-Allergy and Immunology Credits: 5  
Pediatrics-Allergy and Immunology.

**Prerequisites:** Must be a School of Medicine Student.

MEDICINE 9945-C81 Anesthesiology-Sub-Internship Credits: 5

MEDICINE 9972-C81 Surgery-General Sub-Internship Credits: 5

MEDICINE 9973-C81 Surgery Orthopedics Sub-Internship Credits: 5  
Surgery Orthopedics Sub-Internship.

MEDICINE 9974-C81 Surgery Neurological Sub-Internship Credits: 5  
Surgery Neurological Sub-Internship.

MEDICINE 9975-C81 Surgery-Trauma Credits: 5  
Surgery-Trauma

**Prerequisites:** Must be an SOM student

MEDICINE 9976-C81 Surgery - Oral and Maxillofacial Surgery Credits: 5

MEDICINE 9977-C81 Surgical Oncology Credits: 5  
Elective in Surgical Oncology.

**MEDICINE 9985 Miscellaneous - Medical Clinical Nutrition Credits: 5**

Build upon basic (biochemistry/physiology) and clinical science knowledge and skills in order to be able to perform nutrition assessments in children/adults, counsel patients and families on nutrition, order medical nutrition therapy, work with multidisciplinary teams, and appropriately refer for specialized nutrition/feeding services. The elective utilizes didactic instruction, case studies, team projects, individual assignments, and outside reading combined with clinical/community experiences to facilitate student acquisition of knowledge/skills. Gain an appreciation of nutritional therapy from both the clinician and patient/family perspective. Didactic sessions, case studies, and clinical experiences are designed to augment students' outside reading of assigned and suggested references.

**Physician Assistant Courses****MEDPA 5501 Anatomy for the Physician Assistant Credits: 3**

This course studies the anatomy of the human body and its correlation and relationship of anatomic configuration to diagnosis of clinical problems.

**Prerequisites:** MMSPA student.

**MEDPA 5502 Foundations in Basic Medical Science Credits: 4**

This course introduces the basic principles of biochemistry, microbiology, immunology, and pharmacology which prepares the student for Science and Practice of Medicine I - IV.

**Prerequisites:** MMSPA student.

**MEDPA 5504 Ethics, Law and Policy Credit: 1**

This course examines ethical rules, principles, and theories as they relate to health care.

**MEDPA 5505 Clinical Assessment for the PA Credits: 2**

This course will focus on developing foundational physical exam and history taking skills for the physician assistant.

**MEDPA 5511 Clinical Practicum I Credit: 1**

The Clinical Practicum course series will develop professional behaviors, reinforce effective communication with classmates, patients and preceptors, introduce patient safety concepts and give the student clinical experience under preceptor supervision to develop and apply the skills learned in the curriculum.

**MEDPA 5512 Clinical Practicum II Credit: 1**

This course will consist of a variety of activities including lectures, clinical exposure, interprofessional education activities, service learning, and community health experiences. Emphasis will be on developing communication skills, exhibiting professional behaviors, recognizing diversity and needs of the community, and identifying attributes of a health care team.

**Prerequisites:** MEDPA 5511.

**MEDPA 5513 Clinical Practicum III Credit: 1**

This course will consist of a variety of activities including lectures, clinical exposure, interprofessional education activities, service learning, and community health experiences. Emphasis will be on developing communication skills, exhibiting professional behaviors, recognizing diversity and needs of the community, and identifying attributes of a health care team.

**Prerequisites:** MEDPA 5512.

**MEDPA 5514 Clinical Practicum IV Credit: 1**

This course will consist of a variety of activities including lectures, clinical exposure, interprofessional education activities, service learning, and community health experiences. Emphasis will be on developing communication skills, exhibiting professional behaviors, recognizing diversity and needs of the community, and identifying attributes of a health care team.

**Prerequisites:** MEDPA 5513.

**MEDPA 5521 PA Professions I Credit: 1**

This course in the PA Professions series that will focus on the history of the PA profession including the social, regulatory, ethical and professional aspects. Instruction will also be provided in clinical management practices and procedures including coding systems for diagnosis and reimbursement, quality assurance and risk management.

**MEDPA 5522 PA Professions II Credit: 1**

This course focuses on the impact of racial, ethnic and socioeconomic health disparities on health care delivery. The student will become aware of differing health beliefs, values and expectations of patients and other health care professionals that can affect communication, decision-making, compliance and health outcomes.

**MEDPA 5523 PA Professions III Credit: 1**

This course in the PA Professions series will provide basic doctrines and principles of the law to serve as a foundation for legally and ethically sound medical practice. It will include a comprehensive coverage of the history of legal medicine in the United States, the dynamics of the law applied to medical issues and the recent developments in health care delivery and biomedical issues. The legal and ethical issues of narrative medicine in medical practice and its practical applications will be explored and discussed.

**MEDPA 5524 PA Professions IV Credit: 1**

This course in the PA Professions will give students knowledge of the evolution of the health care industry's components and describe the technical, economic, political and social forces that shaped their development. Principles of health policy and public health will be discussed so the student will have a systematic way of thinking about health care in the United States, its problems and the alternatives for managing these problems.

**MEDPA 5531 Science and Practice of Medicine I Credits: 9**

This is a first of four series course that will address the physiology, pathophysiology, basic medical science, clinical presentation, pharmacotherapeutics, physical exam and clinical skills of disease processes presented in a systems format.

**MEDPA 5532 Science and Practice of Medicine II Credits: 12**

This is the second of a four series course that will address the physiology, pathophysiology, basic medical science, clinical presentation, pharmacotherapeutics, physical exam and clinical skills of disease processes presented in a systems format.

**Prerequisites:** MEDPA 5531.

**MEDPA 5533 Science and Practice of Medicine III Credits: 20**

This is the third of a four series course that will address the physiology, pathophysiology, basic medical science, clinical presentation, pharmacotherapeutics, physical exam and clinical skills of disease processes presented in a systems format.

**Prerequisites:** MEDPA 5532.

**MEDPA 5534 Science and Practice of Medicine IV Credits: 19**

This is the fourth in a four series course that will address the physiology, pathophysiology, basic medical science, clinical presentation, pharmacotherapeutics, physical exam and clinical skills of disease processes presented in a systems format.

**Prerequisites:** MEDPA 5533.

**MEDPA 5580 Senior Seminar Credit: 1**

This course will focus on discussion, study, and review of previously covered health topics in preparation for the Physician Assistant National Certification Exam (PANCE).

**MEDPA 5581 Professional Development for the PA Credits: 0.5**

This course focuses on professional development topics for the graduating PA students. Students attend and participate in seminars and discussions pertinent to employment and practice as a PA. Students enroll in the course each of the three semesters that make up the program clinical phase (semesters 5, 6, and 7).

**Prerequisite:** Must be a student in the MMS Physician Assistant program.

**MEDPA 5589 Special Topics Credits: 1-3**

An opportunity to explore in depth topics not included in usual course offerings. One or more topics will be announced in advance of registration.

**MEDPA 5595 Capstone Credit: 1**

This course will align didactic, clinical and professional instruction as well as Graduate Learning Competencies into a project that will have lasting impact for patients, clinical practice, PA education and/or the PA profession.

**MEDPA 5610 Family Medicine I Rotation Credits: 4**

This is a required 4-week rotation in an ambulatory family medicine setting.

**MEDPA 5611 Family Medicine II Rotation Credits: 4**

This is a required 4-week rotation in an ambulatory family medicine setting.

**MEDPA 5612 Elective Family Medicine Rotation - 4 week Credits: 4**

This is an elective 4-week rotation in an ambulatory family medicine setting.

**MEDPA 5613 Elective Family Medicine Rotation II - 4 week Credits: 4**

This is an elective 4-week rotation in an ambulatory family medicine setting.

**MEDPA 5620 Internal Medicine Rotation I Credits: 4**

This is a required 4-week rotation in inpatient and/or outpatient adult medicine setting.

**MEDPA 5621 Internal Medicine Rotation II Credits: 4**

This is a required 4-week rotation in inpatient and/or outpatient adult medicine setting.

**MEDPA 5622 Elective Internal Medicine Rotation I Credits: 4**

This is an elective 4-week rotation in inpatient and/or outpatient adult medicine setting.

**MEDPA 5623 Elective Internal Medicine Rotation II Credits: 4**

This is an elective 4-week rotation in inpatient and/or outpatient adult medicine setting.

**MEDPA 5630 Emergency Medicine Rotation Credits: 4**

This is a required 4-week rotation in an emergency medicine setting.

**MEDPA 5632 Elective Emergency Medicine I - 4 week Credits: 4**

This is an elective 4-week rotation in the emergency medicine setting.

MEDPA 5633 Elective Emergency Medicine II - 4 week Credits: 4

This is an elective 4-week rotation in the emergency medicine setting.

MEDPA 5640 Women's Health Rotation Credits: 4

This is a required 4-week rotation in a women's health setting.

MEDPA 5642 Elective Women's Health Rotation I - 4 week Credits: 4

This is an elective 4-week rotation in a women's health setting.

MEDPA 5643 Elective Women's Health Rotation II - 4 week Credits: 4

This is an elective 4-week rotation in a women's health setting.

MEDPA 5650 Pediatrics Rotation Credits: 4

This is a required 4-week rotation in a pediatric medicine setting.

MEDPA 5652 Elective Pediatrics Rotation I Credits: 4

This is an elective 4-week rotation in a pediatric medicine setting.

MEDPA 5653 Elective Pediatrics Rotation II Credits: 4

This is an elective 4-week rotation in a pediatric medicine setting.

MEDPA 5660 General Surgery Rotation Credits: 4

This is a required 4-week rotation in a general surgery setting.

MEDPA 5662 Elective Surgery Rotation I Credits: 4

This is an elective 4-week rotation in a surgery setting.

MEDPA 5663 Elective Surgery Rotation II Credits: 4

This is an elective 4-week rotation in a surgery setting.

MEDPA 5670 Behavioral Medicine Rotation Credits: 4

This is a required 4-week rotation in a behavioral health setting.

MEDPA 5672 Elective Behavioral Medicine I Credits: 4

This is an elective 4-week rotation in the behavioral medicine setting.

MEDPA 5673 Elective Behavioral Medicine II Credits: 4

This is an elective 4-week rotation in the behavioral medicine setting.

MEDPA 5680 Geriatrics Rotation Credits: 4

This is a required 4-week rotation in a geriatric specialty care setting.

MEDPA 5682 Elective Geriatrics Rotation I Credits: 4

This is an elective 4-week rotation in the geriatric medicine setting.

MEDPA 5683 Elective Geriatrics Rotation II Credits: 4

This is an elective 4-week rotation in the geriatric medicine setting.

MEDPA 5690 Elective Clinical Rotation I Credits: 4

This is a 4-week clinical rotation experience in a new setting or an established area that students wish to gain additional experience.

MEDPA 5691 Elective Clinical Rotation II Credits: 4

This is a 4-week rotation in a newly or recently established clinical setting.

MEDPA 5899 Required Graduate Enrollment Credit: 1

Required Graduate Enrollment.