

College of Osteopathic Medicine

2020 - 2021 Curriculum Catalog



TOURO UNIVERSITY
C A L I F O R N I A

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A MESSAGE FROM THE DEAN OF TOURO UNIVERSITY CALIFORNIA COLLEGE OF OSTEOPATHIC MEDICINE

Welcome to the Touro University California College of Osteopathic Medicine. Since our inception in 1997, we have grown from our original location in San Francisco to Mare Island which is located in the city of Vallejo. This idyllic and tranquil location provides a beautiful stage for the acquisition of knowledge, personal growth and new program development. In the fall of 2004, our branch campus of the College of Osteopathic Medicine opened in Henderson, Nevada extending osteopathic medical education to our southwestern states.

Touro University California College of Osteopathic Medicine is committed to the education of our students following the tenets of osteopathic medicine. Osteopathic medical schools emphasize training students to be primary care physicians incorporating the latest diagnostic and therapeutic medical advances as well as a focus on preventive health care. Our evolving curriculum encompasses a strong basic science foundation combined with early integration of the clinical sciences while always being mindful of the beliefs espoused by the founder of osteopathic medicine Dr. A.T. Still. Dr. Still in the late nineteenth century cautioned to look beyond the disease for the cause and stated, "To find health should be object of the doctor. Anyone can find disease."

Beyond the program in osteopathic medicine Touro University California offers graduate degrees in pharmacy, physician assistant studies, nursing, public health and education. The mission of Touro University is to educate caring professionals to serve, to lead and to teach. Students from diverse backgrounds are recruited nationally to create a dynamic, robust learning environment.

The Touro College and University System is comprised of Jewish-sponsored non-profit institutions of higher and professional education. Touro College was chartered in 1970 primarily to enrich the Jewish heritage, and to serve the larger American community. Approximately 19,000 students are currently enrolled in its various schools and divisions.

We look forward to your inquiries regarding our campus and invite you to visit and share in the excitement of a new generation of physicians poised to help repair the world.

Michael B. Clearfield, D.O., F.A.C.O.I., F.A.C.P.
Dean, Touro University College of Osteopathic Medicine

DESCRIPTION AND PURPOSE OF THE CATALOG

The College Catalog (Catalog) is a reference intended to provide accurate information to students and others regarding Touro University California College of Osteopathic Medicine (TUCOM).

The provisions of the Catalog are subject to change as a result of official actions of the administration. Such changes may be without notice. The student should not consider this Catalog to represent a contract between TUCOM and the student. TUCOM disclaims any misrepresentations that may have occurred as a result of errors in preparation or typing.

Each student must recognize that he/she is responsible for knowledge of current academic regulations, general and specific requirements, student policies and operational policies, contained in this Catalog, the Student Handbook, and other official announcements and published documents of TUCOM.

Touro University California (TUC) reserves the right to make changes at any time in this catalog or in the requirements for admission, graduation, tuition, fees and any rules or regulations. TUC maintains the right to refuse to matriculate a student deemed by the faculty to be academically incompetent or otherwise unfit or unsuited for enrollment.

CATALOG DISCLAIMER

TUCOM produces an online Catalog each year. Should discrepancies exist between other publications, both online or hardcopy, the online Catalog will always take precedence.

HISTORICAL PERSPECTIVE


Touro University is a Jewish-sponsored independent institution of higher and professional education founded by Bernard Lander, PhD, LHD. The institution derives its name from Judah and Isaac Touro, leaders of colonial America who represented the ideal upon which we base our mission.

Touro College was chartered by the State of New York in 1970. The first students enrolled in 1971; the class consisted of 35 liberal arts and science students. Since those early days, the institution has experienced substantial growth.

Touro College has developed into a major institution of higher education, which includes the following schools: the College of Arts and Sciences (1971); the School of Health Sciences (1972); the School of General Studies (1974); the Graduate School of Jewish Studies (1979); the Jacob D. Fuchsberg Law Center (1980); the School for Lifelong Education (1989); the New York School of Career and Applied Science (1995); the Graduate School of Education and Psychology (1995); Touro University College of Osteopathic Medicine California (founded in 1997 as the San Francisco College of Osteopathic Medicine); the Lander College for Men in Kew Garden Hills (2001) created through a merger of two previously separate divisions, the School of General Studies (founded in 1974) and the School of Career and Applied Studies (created in 1995); Touro University Nevada (2004); Touro College South in Florida (2006), Touro University College of Osteopathic Medicine New York (2007) and in 2014 a branch campus in Middletown New York took its inaugural class.

Touro opened a branch in Moscow in Spring 1991 and its operations now include the Institute of Jewish Studies (branch campus) and a business program with Moscow University Touro (an independent entity) operated through an inter-institutional agreement. The branch campus in Jerusalem comprises the Graduate School of Jewish Studies, an undergraduate business program and the Touro Israel Option (year abroad program). In October 2003, Touro opened a small branch campus in Berlin.

Touro has long been interested in medical education. In 1983, Touro established the Center for Biomedical Education, a cooperative program leading to an M.D. from the Technion-Israel Institute of Technology, Israel's premier school of applied sciences. Success in this and other related programs led Touro to explore the possibility of establishing a college of osteopathic medicine. Touro sought incorporation in the State of California, and in 1997 located a campus in the San Francisco Bay Area. The campus was moved to Mare Island in Vallejo, California in 1999. In 2003, Touro University College of Osteopathic Medicine (TUCOM) became the Founding College of Touro University California which is now composed of three colleges: the first is the College of Osteopathic Medicine which grants the Doctor of Osteopathic Medicine Degree (D.O.) and the Master of Science in Medical Health Sciences; the second is the College of Education and Health Sciences (founded



2003) where the School of Health Sciences grants the Master of Science in Physician Assistant Studies-MSPAS, Master of Public Health-MPH and Master of Science in Nursing and within the College of Education (founded 2004) grants master's degrees and provides teacher credentials and the third is the College of Pharmacy (founded in 2004) which grants the Doctor of Pharmacy and Master of Health Science with an emphasis on in Pharmacy Studies).

As Touro College looked to other potential sites for a college of osteopathic medicine, Nevada was chosen as a potential site due to the current physician shortage in Nevada and the rapidly growing population within Las Vegas and the surrounding communities. Touro University Nevada (TUN) was dedicated in 2004. The TUCOM branch campus, Touro University Nevada College of Osteopathic Medicine (TUNCOM), matriculated its first class in Fall 2004 and offers the Doctor of Osteopathic Medicine, Master of Science in Medical Health Science and Master of Science in Physician Assistant studies. The College of Health and Human Services (CHHS) at TUN was founded in 2005 and offers the following programs: Bachelor of Science in Nursing, Master of Science in Occupational Therapy, Doctor of Physical Therapy, and Master of Education, and the Master of Science in Camp Administration and Leadership.

TUCOM MISSION, OBJECTIVES AND GOALS

Mission of Touro College

Touro College is an independent institution of higher and professional education under Jewish sponsorship, established to perpetuate and enrich the Jewish heritage and to serve the larger community in keeping with the Judaic commitment to social justice, intellectual pursuit, and service to humanity.

Mission of Touro University College of Osteopathic Medicine

The Mission of Touro University Osteopathic Medicine Program is to prepare students to become outstanding osteopathic physicians who uphold the values, philosophy and practice of osteopathic medicine and who are committed to primary care and the holistic approach to the patient. The program advances the profession and serves its students and society through innovative pre-doctoral and post-doctoral education, research, community service, and multidisciplinary and osteopathic clinical services.

Accreditation and Approval

Touro University College of Osteopathic Medicine (California and Nevada): In 1995, the California Board for Private Postsecondary and Vocational Education authorized Touro to confer the Doctor of Osteopathic Medicine degree. After obtaining both pre-accreditation and provisional accreditation from the Bureau of Professional Education of the American Osteopathic Association (AOA), Touro was authorized to open its doors to students during the 1997-1998 academic year. An accreditation team representing the Commission on Higher Education of the Middle States Association of Colleges and Schools recommended Touro University College of Osteopathic Medicine for regional accreditation as a Branch Campus of Touro College. The Commission on Higher Education approved that recommendation in December 1997. In April 2001, the AOA awarded full accreditation status to the College of Osteopathic Medicine. In the Spring of 2004, the Commission on Osteopathic College Accreditation (COCA) of the AOA approved the development of a branch campus of Osteopathic Medicine in Henderson, Nevada. In June 2004, the Commission included TUNCOM within the scope of Touro College's accreditation. In May 2009, the Commission reaffirmed the accreditation of TUCOM and TUNCOM campuses. In February, 2005 regional accreditation was transferred from the Commission on Higher Education of the Middle States Association of Colleges and Schools to the Western Association of Schools and Colleges.


From March 30, 2015 through April 3, 2015 TUCOM underwent its seven year COCA accreditation visit at both TUN and our campus. The result of this visit was very positive

with many areas noted for their strengths and a commendation received for TUCOM's strong research programs.

TUCOM Key Accomplishments and Milestones as of June 2020

- For ten consecutive years TUCOM has been ranked in top 10-15 nationally for our graduates matching in Primary Care Residencies by U.S. News and World Report.
- For the decade of 2010-2019 the *Journal of the American Osteopathic Association* identified 10 top research articles in the profession, two of which were authored by TUCOM faculty.
- The 2017 National Center for the Analysis of Healthcare Data (NCAHD) found 50% of TUCOM's alumni (831/1674) practice in California. We are ranked number one in the state for all three categories; 58% in Primary Care, 6% in rural care and 22% in underserved areas.
- In 2017 – 2018 TUCOM earned three national recognitions for innovative curriculum. In 2017 Dr. Jennifer Weiss received the American Association of Colleges of Osteopathic Medicine (AACOM) *Marguerite Ellison Prize for Innovations in Clinical Education* for her design of the Year 3 Clinical Distinction program. In 2018 she and colleagues were awarded the *Stephen Abrahamson Award for Outstanding Innovations* at the Innovations in Medical Education Conference. Also in 2018, Dr. Tami Hendriksz received the AACOM *Innovation in the Development of Enduring Educational Materials Award* for her design of the Patient Perspectives curriculum.
- The TUCOM classes of 2018 – 2020 achieved new heights on national board exams. Passing rates for each class on COMLEX Level 1 were among the highest in the country at 98, 99 and 100%, respectively. The Classes of 2019 and 2020 also exceeded the national pass rate of allopathic medical schools for USMLE Step 1, an optional exam for osteopathic medical students.
- In 2017 the COM was awarded the AOA Strategic Team Award and Recognition (STAR) for its contributions with the TUCOM GROUPIE program. The GROUPIE program investigates pre-specified outcomes of our graduates to demonstrate distinctive and distinguishing characteristics in seven areas; Global Health, research related to Osteopathic Manipulative Treatment, obesity, hand-held ultrasound, Public Health, interprofessionalism and empathy.
- In August 2017 and November 2018, the *Journal of American Osteopathic Association* (JAOA) highlighted the GROUPIE program at TUCOM publishing eight articles overall.

- The COM dual degree DO/MPH program remains the largest in the profession, enrolling an average of 15 students per year or 12% of the total TUCOM student body. In addition a Global Health Pathway Certificate program graduated its first two students in 2106 and has grown in participation each year.
- Student American Academy of Osteopathy Chapter was one of four nationally to receive the Presidential Accolade Award acknowledging the club's combined impact and promotion of OMM.
- In 2017 two new affiliated programs to the Diabetes Prevention Program (DPP) were instituted:
 - Mobile Diabetes Education Center (MOBEC) was funded by a gift from Sutter Health System and additional support offered from Solano County Public Health. Since opening MOBEC has served more than 300 people – including free diabetes screenings (finger stick glucose and A1c), free diabetes education, Dia-BEAT-it exercise classes, and recruiting and offering the DPP and the Diabetes Education and Empowerment Program (DEEP).
NEED TO ADD NIH RECOGNITION OF MOBEC
 - DEEP is a new program supported by the Centers for Medicaid and Medicare Services, it begun in the underserved communities of Solano County. We currently have ten certified coaches. The Student Run Free Clinic is the site of the first DEEP program. There are currently nine participants in the first cohort.
- In 2016 the Touro Metabolic Research Center was opened which has enhanced our research efforts in obesity, diabetes and related metabolic disorders allowing greater collaboration with colleagues throughout the Bay area.
- Since 2015 our DPP Program has trained our students to become CDC Lifestyle Coaches over the course of a year. To date 348 coaches have been trained and six have achieved Master trainer status.
- Since 2014 TUCOM students rotating in Tanzania and Ethiopia were trained as certified trainers in the Helping Babies Breath program, training a total of 168 nurses and 184 health extension workers in Tanzania and Ethiopia. To our knowledge, we are the first medical school (DO or MD) to train students so they can train health workers in these skills during their summer internship.
- TUCOM has increased its community footprint with the continuing development of the affiliation and partnership with the Solano County Family Health Services



Clinic serving over 30,000 local citizens at three Federally Qualified Healthcare Centers representing those most in need of health care services in the county.


- TUCOM continues to expand its community involvement with a Student Run Free Clinic which in 2017 had 420 patient visits, 530 preceptor hours, 1,300 volunteer hours and six community events serving more than 300 clients.
- The People's Garden Project which grows healthy foods for Solano County's most in need residents was enhanced this year with a Mobile Garden Bus which further broadens its community impact.
- The merger with OPTI-West in 2013 combined TUCOM's OPTI with Western University and Pacific Northwest University increasing the residency programs to 67 with 832 trainees. The merger provides a far greater depth of expertise and raises our ability to remain competitive and continue to grow our GME given the emergence of a single GME accreditation system.
- In 2012 TUCOM was awarded the HERO Award from the California Primary Care Association for being the institution that produces the most primary care clinicians in California.

The Osteopathic Medical College

TUCOM is training the doctors greatly needed for today's health care. The curricular emphasis on primary care, inter professionalism, health care disparities, disease prevention and public health, prepares our graduates exceptionally well for contemporary medical practice. At a time when many universities are graduating doctors in specialized medicine, TUCOM continues to remain in the top echelon of those graduating new physicians choosing a career in primary care. The comprehensive, challenging curriculum ensures students will gain a solid foundation in basic science and clinical practice that will enable them a gratifying career whether they choose primary care or specialty medicine. Our students learn osteopathic medical manipulation from faculty clinicians who are widely respected as leaders in their discipline. Faculty scholars mentor students in laboratory research, which impacts patient care and the health of families and communities. Our graduates attain highly coveted, competitive residency positions from primary care to medical and surgical subspecialties, while our alumni continue to distinguish themselves in their practices from coast to coast. "Health care continues to be more global, requiring doctors to be culturally sensitive and understand medical and genetic issues of diverse populations. TUCOM is ideally located where such diversity already exists, better preparing our students for the future, today."

TUCOM has a unique integrative curriculum that is modeled and revised based on the mission of TUCOM. This integrated curriculum allows for students to acquire a sound foundation in the basic sciences while understanding how that foundation relates to patient care. TUCOM prides itself in its proven ability to emphasize primary care with excellent teaching of the clinical skills and knowledge essential for postgraduate training in all fields of medicine. TUCOM's strong commitment to osteopathy is demonstrated through the expert education on the extension of osteopathic philosophy, and the ability to utilize osteopathic principles and practices in every patient encounter. The four-year curriculum utilizes academic and clinical training to strengthen the students' abilities to manage patients whose conditions of health deviate from normal, as well as to utilize effective and appropriate health education and disease prevention. The college is focused on the success of its students in the current and future healthcare milieu, emphasizing the appropriate use of technology in the making of medical decisions, and understanding the psycho-social and economic-legal context in which the practice of osteopathic medicine occurs. Finally, TUCOM strives to produce research that pertains to osteopathic medicine and the health care delivery system, as well as promoting delivery of osteopathic healthcare in the community we serve.

The administrative leadership of TUCOM strives to maintain a skilled and competent academic and clinical faculty, administration and staff who are devoted to working in concert using contemporary educational and clinical facilities while maintaining current and innovative modalities of education and research. TUCOM strives to provide an optimum environment for all participants in the process of developing excellent



osteopathic physicians. Faculty development programs are continuously offered in order to ensure professionals the opportunities for growth, teaching improvement, evaluation strategies, and scholarly performance. TUCOM recognizes that the process of medical education is a continuum from undergraduate, graduate, and post-graduate training. TUCOM sponsors post-graduate programs in support of this continuum.

General Educational Goals

The goal of TUCOM is to educate qualified students to become exceptional osteopathic physicians imbued with the philosophical principles and palpatory and manipulative skills of osteopathic medicine. It is the stated purpose of the college to educate and develop primary care physicians in the osteopathic tradition. At the same time, it proposes to provide its students with a firm academic background so that those who wish may advance further into the osteopathic specialties or academic careers.

TUCOM has a defined set of learning outcomes for our educational program. These learning outcomes have been developed by the faculty to reflect the type of graduates the TUCOM and TUC strive to educate. These learning outcomes reflect our mission statement and are well aligned with both the learning outcomes of TUC and the professional competencies of AOA-COCA. TUCOM emphasizes primary care throughout the curriculum. Considering the national shortage of primary care physicians and particularly the shortage in rural areas TUCOM stresses primary care on several levels, including an increased proportion of clinical time devoted to family medicine, sites for family practice rotations, cooperative efforts toward matching physicians with community need and early identification of undergraduate students committed to becoming rural primary care physicians.

Because research activities are a link to future developments in the osteopathic profession, all faculty members are encouraged to engage in appropriate research activities both at group and individual levels. To that end, funds are budgeted for research purposes each year and for participation in professional conferences, seminars and developmental programs.

Program Student Learning Outcomes

TUCOM has adopted the AOA-COCA competencies as Program Student Learning Outcomes:

- Osteopathic Principles and Practices
- Medical Knowledge
- Patient Care
- Interpersonal and Communication Skills

- Professionalism
- Practice-Based Learning and Improvement
- Systems-Based Practice

Beginning with the incoming Class of 2024 TUCOM adds an additional Program Learning Outcome:

- Structural Competency

For more information about each competency see pages 6-20 of [Osteopathic Core Competencies for Medical Students](#).

The Philosophy of Osteopathic Medicine

Osteopathic medicine is a separate and distinct branch of medical practice that is based on a set of philosophic principles and stresses a comprehensive approach to the maintenance of health. The osteopathic medical education is unique in its emphasis on the neuromusculoskeletal system and its utility in the diagnosis and treatment of disease. It is the unobstructed interrelationship of all the body's systems by which we maintain health and disease is prevented. Founded in 1874 by Andrew Taylor Still, M.D. (1828-1917), osteopathic medicine makes use of the following tenets that assist the osteopathic physician to look for health, and not simply treat a disease state:

- The human body is a dynamic unit of function.
- The human organism is self-regulating and self-healing.
- Structure (anatomy) and function (physiology) are reciprocally interrelated.
- The function of the musculoskeletal system goes beyond support and may be vital in the diagnosis and treatment of disease.

Dr. Still's philosophy of health care and his world view resulted in the introduction of some revolutionary concepts for his time:

- The role of the physician is to seek the health of patients, not simply to treat disease or symptoms.
- The human organism continually strives toward health, and disease is a disruption of this process.
- Disease in any body system will affect the entire body.
- The work of the physician includes assisting the patient's own body in fighting disease.
- All qualified individuals, regardless of race or sex, should be given the opportunity to become a physician. (His was the first medical school of any type to have an anti-discrimination policy, which it had from its beginning.)

What Makes Osteopathic Medicine Unique?

In the United States, there are only two types of medical schools – allopathic (grants M.D. degree) and osteopathic (grants D.O. degree). The osteopathic profession is a minority profession and consists of approximately 16% of the practicing clinicians in our country. In the past, a majority of osteopathic physicians practiced primary care (family medicine, general internal medicine, and pediatrics) and tended to establish clinics in underserved or rural areas. Although this is slowly changing today, many schools of osteopathic medicine still lead the nation in the development of primary care physicians. All schools of osteopathic medicine continue to embrace the basic tenets of Dr. Andrew Taylor Still and incorporate these concepts within the curriculum. All students in osteopathic medicine learn the traditional medicine curriculum plus develop competencies in osteopathic manipulative medicine, a form of manual medicine originally developed by Dr. Still and continuously enhanced by the profession. The philosophy of osteopathic medicine, first enunciated by Dr. Still in 1874, is still true today. Osteopathic medicine continues to emphasize preventative medicine, a holistic approach to patient care, and empowering the patient to strive toward health and not disease.

Synopsis of Curriculum

TUCOM's curriculum stresses the interdependence of the biological, clinical, behavioral and social sciences. Emphasis is on the education of physicians for primary care medicine and the specific roles of osteopathic principles in the maintenance of health and treatment of disease. TUCOM's curriculum is a continuously evolving educational program designed and developed by the faculty to adapt to the ever changing expectations society places on medical education while fulfilling the mission of TUCOM. New courses and changes in existing course work are initiated by the faculty in their respective departments and are approved by the Curriculum Committee and the Dean. Course descriptions are provided below.

A primary care physician must be capable of problem solving and develop an expertise in diagnosis. In order to achieve these goals, TUCOM's curriculum emphasizes the integration of basic and clinical science aspects of medical practice. With this approach, practice in problem solving becomes a part of the daily classroom and clinic experience. The TUCOM Faculty has aligned the D.O. Program Student Learning Outcomes with the following core competencies, developed by AOA-COCA, to help guide curriculum development and assessment.

- Osteopathic Philosophy and Osteopathic Manipulative Medicine
- Medical Knowledge
- Patient Care
- Interpersonal and Communication Skills
- Professionalism

- Practice-Based Learning and Improvement
- Systems-Based Practice
- Structural Competency (beginning with Class of 2024)

The curriculum includes two principal phases:

I. Teaching of the fundamentals of basic sciences, followed by the study of the organ systems of the body, incorporating both basic and clinical sciences. This is integrated with an osteopathic approach to the art and science of doctoring including the fundamentals of history-taking, physical diagnosis, primary care skills, early clinical experiences, and osteopathic principles, practice, and philosophy.

II. Clinical experience and clinical clerkships.

TUCOM Required Coursework Per Year

OMS1 - 2020 - 2021			
Semester	COURSE NUMBER	Course Name	Units
Fall	MEDC 600	Osteopathic Principles and Practices 1	3.5
	MEDC 601	Osteopathic Doctoring 1	3.5
	MEDC 602	Fundamentals of Osteopathic Medicine	13.0
Spring	MEDC 620	Osteopathic Principles and Practices 2	3.5
	MEDC 621	Osteopathic Doctoring 2	4.5
	MEDC 622	Integrated Systems - Cardio-Resp-Renal	14.5
TOTAL			42.5

OMS2 – 2020 - 2021			
Semester	COURSE NUMBER	Course Name	Units
Fall	MEDC 630	Osteopathic Principles and Practices 3	2.5
	MEDC 631	Osteopathic Doctoring 3	5.5
	MEDC 632	Integrated Systems: Musculoskeletal/Neurology	12.5
Spring	MEDC 640	Osteopathic Principles and Practices 4	2.5
	MEDC 641	Osteopathic Doctoring 4	4.0
	MEDC 642	Integrated Systems – GI/Endo/Repro/Derm	13.0
TOTAL			40.0

OMS3 – 2020 - 2021		
Clerkship Type	Duration	Units
Pediatrics	4 weeks	6
Obstetrics and Gynecology	4 weeks	6
Family Medicine	8 weeks	12
General Surgery	8 weeks	12
Internal Medicine	8 weeks	12
Psychiatry	4 weeks	6
Elective Clerkships *	4 weeks	6
Clinical Distinction	8 weeks	12
Osteopathic Clinical Integration & Callback	Longitudinal course	1.5
TOTAL		73.5

OMS4 – 2020-2021		
Clerkship Type	Duration	Units
Obstetrics and Gynecology	2 weeks	3
Pediatrics	2 weeks	3
Primary Care	4 weeks	6
Critical Care	4 weeks	6
Osteopathic NeuroMusculoskeletal Medicine	2 weeks	3
Emergency Medicine	4 weeks	6
Elective Clerkships *	22 weeks	18
TOTAL		60

* Electives can be satisfied as multiple 2-week, 3-week or as 4-week rotations.

Description of Courses

Courses are subject to change through normal academic channels. New courses and changes in existing course work are initiated by the responsible departments, recommended by the Curriculum Committee and approved by the Dean.

FIRST YEAR

Fundamentals of Osteopathic Medicine (13 units)

The Fundamentals of Osteopathic Medicine course presents the scientific basis of clinical medicine. Students will learn the aspects of biochemistry, anatomy, physiology, histology,

embryology, genetics, pharmacology, pathology, microbiology and immunology that are necessary to begin study of the organ and tissue systems of the body.

Osteopathic Doctoring 1 (3.5 units)

The Osteopathic Doctoring course is an integrated and comprehensive course that will span the first two years of osteopathic medical school curriculum. It provides the basic cognitive and kinesthetic skills for future physicians to provide medical attention in a competent and professionally compassionate fashion. This course provides the foundation for students to practice the art and expanding science of osteopathic medicine through focusing on clinical skills (such as, patient interviewing and physical examination), clinical reasoning (the process by which physicians' are able to choose the most appropriate individualized diagnosis and treatment plan), professional practice (the development of behaviors and practices that embody the expectations of an osteopathic medical professional), and clinical integration (the ability to apply basic science knowledge in all aspects of clinical practice). This course utilizes standardized and real patients to help increase early clinical exposure and allows for solidification of the application of basic sciences in clinical practice.

Osteopathic Principles and Practices 1 (3.5 units)

The Osteopathic Principles and Practices 1 course is the first of a four semester cumulative body of basic knowledge and skills that spans the first two years of your Osteopathic medical school curriculum. It is designed to reinforce the basic tenets, philosophy, principles, and practice of osteopathic medicine. Though the course does contain all the inclusive knowledge to be successful in the National Board of Osteopathic Medical Examiners board exams, it is primarily designed to provide the foundation (as well as more advanced theoretical and psychomotor skills) for future osteopathic physicians to integrate osteopathic philosophy, diagnosis, and treatment in a competent compassionate and professional manner into patient care.

Integrated Systems: The Cardiovascular, Respiratory and Renal Systems (14.5 units)

The Integrated Systems Cardiovascular-Respiratory-Renal course (IS-CVRR) will develop a deep understanding of the biological, diagnostic and therapeutic principles that produce optimal health and allow well-informed patient care. In addition, a knowledge base in clinical and basic science will optimize success on board examinations and clinical rotations. Specifically, the course presents physiology, anatomy, pathology, pharmacology, microbiology and clinical sciences as they relate to the cardiovascular, respiratory, and renal organ systems. The course progresses through five sections beginning with basic concepts necessary for understanding the interrelationships of all three systems, followed by detailed study of medical issues in the three systems individually, and together in the concluding clinical overview session at the end.

Osteopathic Doctoring 2 (4.5 units)

See course description for Osteopathic Doctoring 1. As described above Osteopathic Doctoring provides the basic cognitive and kinesthetic skills for future physicians to provide medical attention in a competent and professionally compassionate fashion.

Osteopathic Principles and Practices 2 (3.5 units)

See course description for Osteopathic Principles and Practices 1. As described above Osteopathic Principles and Practices reinforces the basic tenets, philosophy, principles, and practice of osteopathic medicine.

SECOND YEAR

Integrated Systems: Musculoskeletal/Neurology (12.5 units)

The Integrated Systems: Musculoskeletal/Neurology course consists of two sections: starting with the neurology section and continuing with the musculoskeletal section.

The neurology system section is composed of 3 major areas: Neuroanatomy, Neurobiology or functional pathways, and Clinical Neurology. The course starts with a short medical student focused neuroanatomy section. A solid understanding of the functional anatomy and physiology of the normal central nervous system is essential to the recognition of the pathological processes, lesion localization, diagnosis and treatment of neurological diseases. An integrated functional neurobiology and clinical neurology section follows. It is designed to combine basic information concerning the structure and function of the nervous system with clinical information relevant to the practice of medicine.

The musculoskeletal section will provide the knowledge base for understanding the fundamental relationship between structure and function in this important system, which is indispensable for a deep comprehension of muscle, bone and joint disorders. A discussion of the most important pathologies and their epidemiology, pathophysiology, clinical presentation, diagnostic features and principles of management will be the corner stone of all the lectures. The section could also be described as an introduction to Orthopedics and Rheumatology.

Osteopathic Doctoring 3 (5.5 units)

See course description for Osteopathic Doctoring 1. As described above, Osteopathic Doctoring is an integrated and comprehensive course that spans the first two years of the osteopathic medical school curriculum.

Osteopathic Principles and Practices 3 (2.5 units)

See course description for Osteopathic Principles and Practices 1. As described above Osteopathic Principles and Practices reinforces the basic tenets, philosophy, principles, and practice of osteopathic medicine.

Integrated Systems: Gastrointestinal System, Endocrinology, Reproduction, and Dermatology (GERD) (13 units)

The Integrated Systems-Gastrointestinal System, Endocrine/Reproductive System and Dermatology course develops a deep understanding of biological, diagnostic and therapeutic principles concerning the organs and tissues that make up the gastrointestinal system, endocrine and reproductive system, as well as skin. Specifically, this course will provide students with a strong understanding of basic and clinical sciences as they relate to these organ systems. In addition, this knowledge base will be developed in order to optimize success on board examinations and clinical rotations.

Osteopathic Principles and Practices 4 (2.5 units)

See course description for Osteopathic Principles and Practices 1. As described above Osteopathic Principles and Practices reinforces the basic tenets, philosophy, principles, and practice of osteopathic medicine.

Osteopathic Doctoring 4 (2.5 units)

See course description for Osteopathic Doctoring 1. As described above, Osteopathic Doctoring is an integrated and comprehensive course that spans the first two years of the osteopathic medical school curriculum.

Beginning with the Class of 2023 all course grades are reported as Pass/Fail. The Year 1 and Year 2 courses are Pass/Fail and the Year 3 and Year 4 courses include Pass/Fail as well as Honors/Pass/Fail courses.

ELECTIVE COURSES

PRE-CLINICAL ELECTIVE COURSES

This listing is updated as of Fall 2019, but elective course offerings may vary year to year based on faculty availability, student interest, and other factors. Elective courses earn one unit of credit unless noted otherwise. Grading is on a pass/fail basis.

ADVANCED ANATOMY 1 (Fall) BSCI 659 1.0 units

ADVANCED ANATOMY 2 (Spring) BSCI 660 1.0 units

Course Coordinator: Bruce Silverman B.S.

Course Description: The objective of these courses is to formalize student prosection into a directed learning experience that benefits both the enrolled students (in terms of focused study of human anatomy and potential development of research projects) and the students taking Human Anatomy as part of the curriculum of any of our colleges. The elective is open to second year osteopathic medical students and to students who have taken the anatomy course that is offered as part of the physician assistant program. Participants will perform directed prosections in pursuit of their own learning projects and for extended study by first-year students in these programs. Enrollment in Advanced Anatomy I is not a prerequisite for enrollment in Advanced Anatomy 2 and the topic areas are distinct.

ART OF OBSERVATION BSCI 665 1.0 units

Course Coordinator: Tamira Elul Ph.D.

Course Description: This elective involves focused observation of people in fine art paintings and discussions of your observations. The objectives are to enhance medical students' visual diagnostic and critical thinking skills based on observation, as well as their emotional engagement, and interpretive abilities regarding their patients. The Art of Observation elective comprises seven sessions, each 1-1.5 hours. Four of the sessions will be held on campus and three off campus at local museums.

GLOBAL HEALTH: Fundamentals of Global Health (Fall) BSCI 668 3.0 units

Course Co-Coordinators: Eiman Mahmoud MD, Athena Lin PhD, H. Eduardo Velasco MD PhD, Alissa Farrell DO

Course Description: The primary goal of the course is to transfer information into knowledge that will prepare the student to work with underserved communities locally and globally. The course will present an overview of issues in global health from the viewpoint of many different disciplines. The course will introduce students to the principles and practice of global health. Using six leading global health topics as examples, students will be introduced to basic concepts of global health, with a focus on closing the gap between global health science and practice at home and abroad.

GLOBAL HEALTH: Health and Disease in the Developing World (Spring)

BSCI 669 1.0 units

Course Co-Coordinators: Eiman Mahmoud MD, MPH, Athena Lin PhD

Course Description: Unit 1 provides an opportunity for an examination of basic issues of health in developing countries with country and specific diseases given as examples for each issue. Unit 2 familiarizes students with current strategies for implementation and delivery of intervention programs and provides an opportunity for students to critically

analyze the intervention and public health programs in developing countries. Unit 3 introduces the student to the role of social, cultural, environmental and developmental factors in shaping various aspects of health in developing countries. Unit 4 introduces the student to challenges of policies and strategies in public health – a comparative study. This course, offered in the spring semester, is a prerequisite to Global Health: Summer Internship.

GLOBAL HEALTH: Summer Internship BSCI 670 3.0 units

Course Coordinator: Eiman Mahmoud MD, MPH, Site coordinator varies per site

Course Description: The mission of the Global Health Summer Internship is to serve, to learn, and to teach. The summer program has been set up to provide the TUCOM students interested in Global Health and Tropical Medicine an opportunity to learn about various endemic diseases around the globe, improve their clinical skills in the diagnosis and management of these diseases and begin to understand the challenges that confront medical practitioners specifically in developing countries. The internship also offers avenues for research and service learning projects particularly in the area of public health. Available sites currently include Mexico, Bolivia, Tanzania and Ethiopia, for clinical, 20 research and service projects and Taiwan and Israel for clinical training only. Participation at the Africa sites requires completion of the Helping Babies Breathe elective described below.

HELPING BABIES BREATHE: Newborn Stabilization in the Developing World
PRCR 660 1.0 units

Course Co-Coordinators: Tami Hendriksz D.O., Eiman Mahmoud M.D., M.P.H.

Course Description: HBB is an evidence-based educational program to teach neonatal resuscitation techniques in resource-limited areas. This course will provide learners with the ability to teach the HBB program during the Global Health summer internship to local individuals who will be providing these services. This course is available to all students enrolled in Global Health Elective and mandatory for students participating in the Global Health Summer Internship at the Africa sites.

INTEGRATIVE MEDICINE: CLINICAL CASES OMM650 1.0 units

Course Coordinator: Victor Nuno D.O.

Course Description: This course is designed to provide an introduction to integrative medicine. The course is comprised of six sessions at which times we will cover various topics including 1. Assessment and treatment of adrenal gland dysregulation; 2. Functional assessment of the thyroid gland; 3. Saliva hormone testing; 4. Micronutrient assessment and replenishment; 5. Assessment and clinical considerations of genetic single nucleotide polymorphisms; 6. Basics of supplement replacement; 7. Clinical homeopathy.

MEDICAL NUTRITION: Foundations PRCR 651A 1.0 units

Course Coordinator: Grace Jones, Ph.D.

Course Description: A deep understanding of nutrition is critical to the holistic health care professional. This course is a 25-hour, 1 unit elective that focuses on advanced nutrition education, specifically addressing the role of nutrition in maintaining health and ameliorating disease. The bulk of the curriculum consists of online modules designed for medical students. The curriculum is called "Nutrition In Medicine" and was developed at the University of North Carolina at Chapel Hill. It offers an evidence-based foundation in nutrition and is currently utilized at 129 medical schools around the world. This academic content is complemented by an experiential component of the student's choosing. This course will ideally be the first of a 2 part series of Nutrition electives: Foundations in the Fall; Clinical Nutrition in the Spring. This course is open to students of osteopathic medicine, pharmacy, public health, and physician assistant in the colleges of COM, COP and CE&HS.

PALLIATIVE CARE PRCR 665 1.0 units

Course Coordinator: Catherine West M.D., Melissa Kirkpatrick, PharmD,

Course Description: This will be an interprofessional 12-hour course open to students in the osteopathic medicine, pharmacy, physician assistant and nursing programs. It will offer interactive didactic sessions on pharmacologic and non-pharmacologic strategies for management of pain and non-pain symptoms in the palliative care setting. The course will emphasize an interprofessional team-based cost-effective approach to patient care that maximizes patient values, comfort and safety. Students will practice this approach themselves in interprofessional teams with case simulations and have the opportunity to observe an interprofessional panel of experts.

PREGNANCY PARTNERS PRCR 652 1.0 units

Course Director: Tina Mason, D.O.

Course Description: This program is designed to allow first year osteopathic medical students to observe and act as advocates in the prenatal care, labor, and delivery of a prospective mother. The prospective mothers are clients of "Great Beginnings Prenatal Services" operated through Sutter-Solano Medical Center in Vallejo, CA. In the program a TUCOM student is matched with a prospective mother, attends all prenatal office visits, and is present during labor and delivery, as well as for the first postpartum office visit. The student will observe the relationships developed between the prospective mother and her health care providers and the protocol of the labor and delivery rooms. The course will also include lectures on a variety of topics related to maternal and fetal health.

SOCIAL JUSTICE IN PUBLIC HEALTH BSCI 673 1.0 units

Course Co-Coordinators: Tami Hendriksz DO, Gayle Cummings MPH

Course Description: This course provides an introduction to topics of public health and social justice through a speaker series, viewing and analyzing segments of relevant documentaries, and discussion of social determinants of health.

SUMMER CLINICAL PRECEPTORSHIP PRCR 658 1.0 units

Course Director: Tami Hendriksz D.O.

Course Description: This class is intended to provide students with the opportunity to apply basic science knowledge in a clinical setting during an otherwise non-academic time; i.e., between the first and second years. Students will, with approval of the course coordinator, work with a faculty member of TUCOM, a clinician at another institution, or a licensed physician in the community, in order to observe medical practice in an area of medicine and a clinical setting of their choice.

THE HEALER'S ART (1.0 Units) PRCR 659 1.5 units

Course Director: Catherine West M.D.

Course Description: The Healer's Art, developed by Dr. Rachel Naomi Remen, was first presented at the University of California San Francisco School of Medicine in 1993 and, as of 2016, had been successfully replicated in over 80 medical schools in the US and abroad. It addresses the hidden crisis in medicine, the growing loss of meaning and commitment experienced by physicians nationwide under the stresses of today's health care system. The course is comprised of five interactive sessions entitled: Discovering and Nurturing Your Wholeness; Sharing Grief and Honoring Loss (2); Beyond Analysis: Allowing Awe in Medicine, and The Care of the Soul: Service as a Way of Life.


WILDERNESS MEDICINE: MOUNTAIN MEDICINE BSCI 672 1.0 units

Course Coordinator: Greg Gayer PhD

Course Description: This course is designed to provide an introduction to management of common medical issues specific to mountainous environments. The course is comprised of four self-study sections including 1) high altitude illness 2) thermoregulation 3) trauma and improvised medicine and 4) backcountry OMT. There will also be two, one day interactive sessions in which students will go into the field and practice skills such as improvised litters, splinting, and OMT considerations in the backcountry.

Clinical Experience

The philosophic framework of clinical education and training at TUCOM is that of preparing students to become competent osteopathic physicians who clearly recognize



their roles as providers of comprehensive healthcare to the individual, to the family as a unit, and to communities. Training will allow students to apply osteopathic principles and practices and their hands-on diagnostic and treatment skills to patient care as they implement the tenets of osteopathic practice into each patient encounter. Given their increasingly important role in primary care, osteopathic physicians must be able to function in the role of leader of the healthcare team to bring about needed change from the level of the individual to the level of the community. The ultimate intent of the program is to prepare osteopathic physicians who will treat their patients from a holistic perspective of mind, body and spirit and impact positively on the quality of healthcare and healthcare delivery systems.

In today's healthcare arena, osteopathic physicians are an integral factor to curb the shortage of primary care physicians. Students' attitudes and learning will be directed toward understanding the role of osteopathic physicians in primary care and other specialties. The TUCOM staff and faculty believe that the osteopathic physician must assume a leadership role not only in the medical community, but in the broader community in which he/she serves. Community leadership is an integral part of improving the healthcare of the community as a whole; thus, osteopathic care physicians must be motivated toward the prevention of illness and the upgrading of the delivery of healthcare services at extended levels. In pursuit of the goal of excellence, the TUCOM clinical curriculum is a challenging blend of the traditional and innovative learning designed to:

- Foster the analytic and problem-solving skills requisite for physicians involved in disease prevention, diagnosis, and treatment in individual patients, in families, in communities, and in populations at large.
- Incorporate osteopathic principles and practices into each patient encounter.
- Ensure the acquisition of basic clinical knowledge and essential clinical skills.
- Develop an understanding of contemporary healthcare delivery issues.
- Cultivate effective physician-patient relationships based upon integrity, respect and compassion.
- Develop high ethical standards.
- Promote a lifelong commitment to learning.

As a result of two years of clinical training, students will see the osteopathic physician as being able to:

- Demonstrate clinical excellence, using current biomedical knowledge in identifying and managing the medical problems presented by his/her patients.
- Utilize osteopathic principles and practices and osteopathic manipulative treatment (OMT) to support health and aid in recovery of illness or disability.
- Provide continuing and comprehensive care to individuals and families.

- Demonstrate the ability to integrate the behavioral/emotional/social/environmental factors of families in promoting health and managing disease.
- Recognize the importance of maintaining and developing the knowledge, skills, and attitudes required for the best in modern medical practice in a rapidly changing world.
- Undertake a regular and systematic program of lifelong learning.
- Recognize the need and demonstrate the ability to use consultation with other medical specialties while maintaining continuity of care.
- Share tasks and responsibilities with other health professionals.
- Be aware of the findings of relevant research; understand and critically evaluate this body of research; and apply the results of the research to medical practice.
- Practice in a business-like, cost-effective manner.

Clinical Clerkship Program

The Clinical Clerkship program is designed to meet California state requirements for physician training in live patient care while also providing as much self-designed (e.g., elective clerkship) training as possible. Required subject training (core clerkships) are assigned in a manner prescribed by the Curriculum Committee and the Clinical Education Department to assure that every student obtains the core experience needed to become a well-trained osteopathic primary care physician.

Elective flexibility is provided by one (1) elective during the 3rd year and multiple selective and elective experiences during the 4th year. In addition during the 3rd year, students have two (2) Clinical Distinction courses, a time when students are called upon to examine their own proficiency in all competency areas of clinical medicine and design a study program that allows them to round out their capacities and prepare for successful clinical work. Students are expected to use this time to develop a deeper professional identity as an osteopathic physician.

Whenever possible, we use hospitals approved by the AOA for post-doctoral training because the inspections by the AOA, in addition to our own, provide assurance of adequate teaching material and faculty. Also, the interaction with the house staff increases the student's opportunity for learning. In addition, we have ambulatory training sites that range from private practices to urban and rural health centers. The clerkships provided at each site, and the number of students assigned to each site from TUCOM, are determined by mutual agreement of the Hospital Administrator, Director of Medical Education, Clinical Faculty and the TUCOM Department of Clinical Education.

For more detail on the specific core and elective rotations, please refer to the Clinical Rotation Manual provided by the Clinical Education Department.

MSMHS Course Descriptions



HSOC-600-0 Anatomy (4 units)

This course familiarizes the student with clinically relevant anatomy of the human body. The focus is on structural and functional relationships of anatomical structures. These relationships are presented utilizing both lecture and laboratory. The laboratory portion contains cadaver dissection and diagnostic imaging and focuses on spatial relationships, normal structure and normal variant structures, the relationships of organs and organ systems; also there are clinical correlations and consideration of gross pathology. (Course Coordinator: David Eliot)

HSOC-601-0 Medical Biochemistry (3 units)

Medical biochemistry reviews biomedical and genetic principles underlying human function. Students are expected to formulate the basis of the knowledge from basic science disciplines that are useful for clinical practice. Each topic has been designed to be consistent with National Board of Osteopathic Medical Examiners (NBOME) and based on the curriculum at TUCOM. Course objectives cover most if not all the topics required at medical schools. (Course Coordinator: Shin Murakami)

HSOC-602-0 Molecular Cell Biology (3 units)

The course will study cell and molecular biology as it applies to health and disease. The major topics covered will be cell and matrix structure, signaling and biophysics, histology of basic tissue types, molecular biology of DNA and RNA, cell cycle and cancer genetics, as well as biotechnology. Emphasis will be on understanding basic cell and molecular mechanisms in a normal healthy adult, and how those mechanisms go awry during development of cancer. (Course Coordinator: Tamira Elul)

HSOC-603-0 Neuroscience (3 units)

This medical neuroscience course is designed to provide a thorough understanding of the human nervous system. This course will cover topic areas which include neuroanatomy, neurohistology, neurophysiology, neurochemistry, neuroembryology, sensory systems and pathways, motor systems and pathways, clinical identification of specific neurological disorders and diseases, and neuroanatomical identification of nervous system lesions. (Course Coordinator: Barbara Puder)

HSOC-604-0 Introduction to Research (2 units)

Students will learn how research and laboratory medicine is conducted, analyzed, and communicated, via a rotation of presentations by active research faculty and by active participation in journal club presentations. There will also be a biostatistics module within

this course in which students will also learn how to statistically analyze data, with application to the biological sciences. (Course Coordinator: Alan Miller)

HSOC-605-0 Physiology 1 (3 units)

The course will take a systems based approach to study the fundamental principles of medical physiology as it applies to health and disease. The major systems covered will be nervous, cardiovascular, respiratory, renal, gastrointestinal, endocrine and reproductive physiology. Emphasis will be on understanding basic physiological mechanisms in a normal healthy adult and will be presented at the gross, cellular and/or molecular level. Where appropriate, descriptions of normal physiology will be integrated with pathophysiological scenarios for emphasis and clinical relevance. (Course Coordinator: Ted Wong)

HSOC-606-0 Physiology 2 (3 units)

This course is a continuation of Physiology 1 from the fall semester. The course will take a systems based approach to study the fundamental principles of medical physiology as it applies to health and disease. The major systems covered will be nervous, cardiovascular, respiratory, renal, gastrointestinal, endocrine and reproductive physiology. Emphasis will be on understanding basic physiological mechanisms in a normal healthy adult and will be presented at the gross, cellular and/or molecular level. Where appropriate, descriptions of normal physiology will be integrated with pathophysiological scenarios for emphasis and clinical relevance. (Course Coordinator: Ted Wong)

HSOC-607-0 Immunology and Infectious Disease (3 units)

This course is divided in three sections:

- The first section explains the basis of innate and acquired immunity at the molecular, cellular, organ and systemic level. Students will learn how to analyze developmental aspects of immunity and how the immune system responds to pathogens.
- The second part covers clinical immunology and the mechanisms on how the immune system can cause disease. Students will learn mechanisms of immunopathogenesis, and also how the immune system can be harnessed to treat cancer.
- The third and last section will focus on infectious diseases. This section will an introduction to medical microbiology and a description of infectious agents. We will cover medically relevant microbes (bacteria, viruses, fungi and parasites), and major mechanisms of their transmission, pathogenesis along with management of the presented infectious agents. Students will learn how to characterize the molecular and structural features of microbial organisms and relate these structures to their functions and laboratory diagnosis as well as their roles in microbe-host interaction. (Course Coordinator: Evan Hermel)

HSOC-608-0 Pharmacology (3 units)

The course will cover selected topics in pharmacology, including general principles, CNS and PNS pharmacology, renal and GI pharmacology, and cardiovascular pharmacology. Emphasis will be on understanding the basic principles of pharmacology, the different classes of pharmacologic agents and their sites and mechanism of action, along with indications for use and contraindications or serious side effects arising from use. (Course Coordinator: Gloria Klapstein)

HSOC-609-0 Research Internship (3 units)

Students will participate in a full time research project with a faculty mentor. The research project will culminate in a final paper and a final poster presentation. In addition, the methods of scientific presentation and data analysis will be reinforced via student journal club presentations and lectures by faculty mentors. (Course Coordinator: Alan Miller)

COLLEGE OF OSTEOPATHIC MEDICINE

GRADUATION REQUIREMENT REVIEW

MASTER OF SCIENCE IN MEDICAL HEALTH SCIENCES

The MSMHS program requires **30** semester credit hours of study.

COURSE REQUIREMENTS – FALL

COURSE #	COURSE NAME	CREDITS	COMPLETE
HSOC 601	Medical Biochemistry	3	<input checked="" type="checkbox"/>
HSOC 602	Molecular Cell Biology	3	<input checked="" type="checkbox"/>
HSOC 603	Neuroscience	3	<input checked="" type="checkbox"/>
HSOC 604	Introduction to Research	2	<input checked="" type="checkbox"/>
HSOC 605	Physiology	3	<input checked="" type="checkbox"/>
TOTAL UNITS REQUIRED		14	

COURSE REQUIREMENTS – SPRING

COURSE #	COURSE NAME	CREDITS	COMPLETE
HSOC 600	Anatomy	4	<input checked="" type="checkbox"/>
HSOC 606	Physiology 2	3	<input checked="" type="checkbox"/>
HSOC 607	Immunology and Infectious Disease	3	<input checked="" type="checkbox"/>
HSOC 608	Pharmacology	3	<input checked="" type="checkbox"/>
HSOC 609	Research Internship	3	<input checked="" type="checkbox"/>
TOTAL UNITS REQUIRED		16	



ADMISSIONS PROCESS

Admissions requirements and process for the College of Osteopathic Medicine are fully detailed within the University Catalog, available at <http://studentservices.tu.edu/catalog/index.html>.