Master of Science
Interdisciplinary Studies in
Biological and Physical Sciences

Middletown Campus
Touro College is an independent institution of higher education under Jewish auspices, established to transmit and perpetuate the Jewish heritage, as well as to serve the general community in keeping with the historic Jewish commitment to intellectual inquiry, the transmission of knowledge, social justice, and service to society.

Touro offers undergraduate and graduate programs in Jewish studies, the liberal arts and sciences, and the professions including education, law, medicine, pharmacy, health sciences, social work, and business. These programs serve diverse components of the Jewish community and the larger society, especially those who have been underserved in the past. Touro is a college where personal growth, scholarship and research are fostered and where men and women are prepared for productive lives of dignity, value, and values.

The Jewish heritage embraces two fundamental components, the particular and the universal, as reflected in Hillel's dictum in Ethics of the Fathers, "If I am not for myself, who will be for me? And if I am concerned only with myself, what am I?" This teaching shapes the core values of the college, which include a commitment to quality education for all, the treatment, with integrity and respect, of all students, faculty and staff, the role of ethics in the professions, and the building of a responsive and responsible society.
The Touro College of Osteopathic Medicine is committed to training osteopathic physicians, with a particular emphasis on practicing medicine in underserved communities, and to increasing the number of underrepresented minorities in medicine. We value and support public service, research, graduate medical education, and osteopathic clinical service in the community that will strive to improve health outcomes for those we serve. We will work to educate students though the use of latest innovative education techniques using summative and formative measures so as to graduate qualified osteopathic physicians.
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This is a dynamic document and is subject to change; suggestions are welcome.
Please send comments to: masters.tourocom-mid@touro.edu
Effective 11/1/2020
The Program and its Objectives

The Master of Science program in Interdisciplinary Studies in Biological and Physical Sciences has been carefully designed for students who have the strong ambition to complete a medical education. This 10-month MS program provides students who are interested in becoming osteopathic and allopathic physicians an opportunity to prepare themselves for the academic rigors of medical school by immersing them into a biomedical curriculum that includes clinical anatomy, physiology, biochemistry, Immunology, Neuroanatomy and Histology. Students who are interested in dentistry, pharmacy, podiatry, physician’s assistant, pathologists’ assistant and PhD programs can also strengthen their foundation in these core biomedical sciences through this program.

All courses are offered at the Touro College of Osteopathic Medicine (TouroCOM) Campus in Middletown, NY and are presented by the medical college faculty in lecture, workshop, and laboratory venues.

The faculty will encourage students to reach their full potential as they learn to focus on clear objectives in each course. Student performance will be closely followed with frequent evaluations that provide opportunities for counseling and growth throughout each term.

The MS program can serve as a bridge to the DO program, and graduates who have achieved key academic and professionalism benchmarks will be invited to enter the Touro College of Osteopathic Medicine the following year as first year medical students. Opportunities for admission to Touro College professional degree programs in Pharmacy, Physician’s Assistant, and Podiatric Medicine are also be available.
Important Features:

The Master of Science Interdisciplinary Studies in Biological and Physical Sciences Program

1. Applications will be received from November 1st through May 15th

2. Major courses in the MS program run in parallel with the first-year DO class.
   a. Anatomy and Embryology
   b. Neuroanatomy
   c. Biochemistry
   d. Physiology
   e. Histology and Cell Biology
   f. Microbiology and Immunology
   g. Medical Genetics

3. The program will be completed within two (2) semesters.

4. Award of the Master of Science Degree requires completion of all courses, a cumulative GPA of 3.00 GPA and a grade of Pass on the year end Comprehensive Examination.

5. Matriculation into the D.O. Program at Touro College of Osteopathic Medicine is limited to students who have met the following standard:
   a. Completion of the M.S. curriculum
   b. A final program GPA of 3.450/4.0 or higher
   c. A passing grade on the Comprehensive Examination
   d. Demonstrated professionalism and conduct becoming of a physician throughout the MS program
   e. Otherwise adherence to the Admission deadlines and requirements listed on Touro College of Osteopathic Medicine website, including results from a CASPer (Computer-based Assessment or Sampling Personal Characteristics) assessment taken before the start of the first DO year.
Synopsis of Curriculum:

All courses are offered at the TouroCOM campus in Middletown, New York and are presented by the medical college faculty in lecture, workshop and laboratory venues. The opportunity exists for students attending the MS program to take classes alongside students who attend the DO program at the TouroCOM - Middletown Campus.

**Fall Semester – Middletown Campus**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBE 530</td>
<td>Clinical Anatomy and Embryology</td>
<td>7</td>
</tr>
<tr>
<td>CBE 500</td>
<td>Biochemistry</td>
<td>4</td>
</tr>
<tr>
<td>CBE 550</td>
<td>Physiology I</td>
<td>4</td>
</tr>
<tr>
<td>CBE 510</td>
<td>Histology and Cell Biology</td>
<td>5</td>
</tr>
<tr>
<td>CBE 620</td>
<td>Law and Ethics in Medicine</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total: 21**

**Spring Semester – Middletown Campus**

<table>
<thead>
<tr>
<th>Course</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBE 501</td>
<td>Medical Genetics</td>
<td>3</td>
</tr>
<tr>
<td>CBE 551</td>
<td>Physiology II</td>
<td>3</td>
</tr>
<tr>
<td>CBE 520</td>
<td>Neuroanatomy</td>
<td>4</td>
</tr>
<tr>
<td>CBE 600</td>
<td>Microbiology and Immunology</td>
<td>5</td>
</tr>
<tr>
<td>CBE 535</td>
<td>Clinical Anatomy and Embryology II</td>
<td>3</td>
</tr>
<tr>
<td>CBE 580</td>
<td>Health and Human Behavior</td>
<td>2</td>
</tr>
<tr>
<td>HS 668</td>
<td>Community Service</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total: 21**

**Please Note:** Courses designations and credit hours are subject to change without notice.
The Student Body

African Americans in New York State comprise approximately 15.9% of the population, yet only 8% of those enrolled in medical school. At the same time, Hispanic communities constitute 15.1% of the population, but only 5% of the medical school enrollment (Sources: AMS, AAMC, U.S. Census 2000). It is the mission of TouroCOM to increase the enrollment of underrepresented minorities in the student body at its institutions, and to ultimately increase the representation of minority physicians in New York State. We will strive to have a student body in the MS program which reflects this mission.

Facilities and Curriculum

Campus Overview

TouroCOM – Middletown Campus, occupies the newly renovated Horton Hospital site, with three floors and 110,000 square feet devoted to the medical school and MS program.

The ground floor of TouroCOM – Middletown Campus, houses a state-of-the-art theatre/lecture hall with auditorium-style seating, holding over 135 students. The second lecture hall holds approximately 170 students. Three additional classrooms accommodate an estimate of 50 students each to facilitate small group learning experiences. There are study areas on all three floors of the building, including 18 group study rooms that can accommodate up to 10 students each for small group activities.

The ground floor also houses the TouroCOM library (see below) and video recording studio, where Middletown Campus faculty can record video lectures.

The first floor of TouroCOM – Middletown Campus, houses the student services administration and staff, with rooms for admissions and private consultation rooms for students who have questions regarding financial or academic concerns. The atrium and self-service store is also located on the first floor. OSCE rooms, the Medical Simulation Lab, OMM Lab and the Anatomy lab are located on the second floor of the medical school. The second floor also has study and conference rooms.

Finally, TouroCOM faculty offices are also housed on the 2nd floor. This central office space is shared by the Basic Science, Osteopathic Medicine, Primary Care and Anatomy departments and allows for close interaction between all faculty members, thereby promoting curricular integration and research collaboration.
**Library**

The library is located on the ground floor and is primarily an electronic library. The TouroCOM Middletown Library is connected to the larger Touro College online library system. This is the gateway to 1000’s of online journals and science and medical texts provided to students. In addition, the library has a reservation and circulation desk that hold copies of all required and suggested course texts. The library also maintains an extensive collection of hard cover medical texts and course review texts available to medical and students, as well as an online document/book borrowing system for those resources that are not immediately available.

Housed within the library are 46 desk top computers and a photocopy facility for student use. There is also seating for over 100 students to utilize this space for study purposes.

The library is staffed by 2 full time employees, a Library Director and assistant who regularly provide large/small group and individual training to the students on how to take advantage of the library resources. They also provide training on how to use on-line document search engines such as Pubmed.gov.

**Curriculum & Learning Resources**

All courses are delivered using a “Flipped” classroom model. The flipped classroom emphasizes independent discovery of information and reserves valuable classroom time for case discussion, application questions and peer-peer teaching activities. The goal of this educational model is to combine a self-paced discovery of the content with the opportunity for engaging, application-centered classroom/lab activities that facilitate long-term retention of information and a deeper understanding of how the information is relevant in a clinical setting.

By this model, students independently read textbook assignments and clinical cases and/or watch recorded lectures according to published syllabi for each course. Course lectures are created and reading/case assignments are given based upon a set of learning objectives published in the syllabus and slide set of each lecture. Once in the classroom, the experience is structured around discussion and peer-peer teaching as students work together to answer challenging clinical vignette style questions utilizing the concepts presented in the readings and recordings. Application also occurs in the laboratory setting in the Anatomy, Histology, and Neuroanatomy courses. The student’s answers to the classroom questions are recorded and reviewed as part of the in-class exercise, thereby utilizing this as a formative learning and evaluation exercise, which culminates in formal summative examinations.

All teaching areas are fully equipped for wireless internet access, digital presentations, and audience response systems.
A very important curricular tool in use at TouroCOM is the Examsoft test writing/administration platform. Use of this software has allowed faculty to collect data on student performance on each exam question, allowing faculty the opportunity to identify content areas that require additional student/faculty attention.

The production of video lectures to support the flipped classroom curriculum is facilitated by a recording and video editing studio, containing the necessary filming, and editing equipment required for video production. Finally, the college also maintains a data server, on which the complete library of lecture recordings is stored and accessed by students.
Master’s Program Application Requirements

Academic requirements for admission to the MS Program will be evaluated on an individual basis by the program administrators. An interview by video conference or during a personal visit to the campus will be required and initiated at the discretion of the Program Director. The summary of admission requirements follows:

1. **Baccalaureate Degree from an Accredited College or University**
   At the time the application is filed, applicants should:
   a. Possess an undergraduate science grade point average of at least 3.0 on a 4.0-point scale.
   b. Possess an overall grade point average of at least 3.0 on a 4.0-point scale.
   *All foreign transcripts must be accompanied by a recognized evaluation transcript.*

2. **Pre-Requisite Courses:**
   a. Applicants must have completed an acceptable academic year sequence (generally 8 semester hours) with no grade below 2.0 on a 4.0-point scale in each of the following subjects:
      i. One year of English Composition (6 credits)
      ii. One year of Behavioral Science (6 credits)
      iii. One year of Biology with Lab (8 credits)
      iv. One year of General Chemistry with Lab (8 credits)
      v. One year of Organic Chemistry with Lab or Biochemistry (8 credits)
      vi. One year of Physics with Lab (8 credits)
      vii. One year of Mathematics, may include Calculus or Statistics (4 credits)

3. **Medical College Admissions Test (MCAT) score acceptable to the program.** GRE, DAT, PCAT scores are accepted, but an official MCAT score report is required for the opportunity to directly matriculate into the DO program upon completion of the MS program.

4. **Three Letters of Recommendation**
   a. Two letters should be written by individuals who can evaluate the applicant’s science background. An official letter from the College Premedical Committee may substitute for the three letters of recommendation.

5. **Please direct all application materials and questions regarding applicant eligibility to:**

   Neida Vasquez – MS Program Coordinator
   Touro College of Osteopathic Medicine
   60 Prospect Avenue Middletown, NY 10940
   Masters.tourocom-mid@touro.edu
   (845) 648-1200
Policy on Admission to Touro College of Osteopathic Medicine

Admission to the D.O. Program at Touro College of Osteopathic Medicine is limited to students who have met the following standard:

a. Completion of the M.S. curriculum
b. A final program GPA of 3.450/4.0 or higher
c. A Pass on the Comprehensive Examination
d. Demonstrated professionalism and conduct becoming of a physician throughout the program.
d. A valid CASPer exam score (taken between 5/2021 and 10/2021)

Admission to the Touro College of Osteopathic Medicine also requires completion of a background check and completion of all health inventory requirements, and that you met certain technical requirements, which are included in the admissions process for the Medical College.

More information on the CASPer exam can be found on our website linked here.

The Master’s Program is a focused educational offering. Admission of graduates of this program to the D.O. program is outside the AACOMAS application process.

Application and Further Information:
https://tourocom.touro.edu/masters

For further assistance, please contact:

Neida Vasquez – MS Program Coordinator
Touro College of Osteopathic Medicine, Middletown Campus
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Stephen Jones, PhD
Assistant Preclinical Dean and Master of Science Program Director
Touro College of Osteopathic Medicine, Middletown Campus

Jerry Cammarata, PhD
Dean of Student Affairs & Chief Operating Officer
Touro College of Osteopathic Medicine, Middletown Campus

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Program Faculty

**Clinical Anatomy and Embryology**
Stephen Moorman, PhD  
Anatomy Department Chairman  
Oana Rosenthal, MS  
Course Director  
Judith Labarge, DC

**Biochemistry / Genetics**
Sankhavaram Panini, PhD  
Course Director & Basic Science Department Chairman  
Vasudeva Kamath, PhD

**Community Service**
Martin Torrents, DO  
Course Director & OMM Department Chairman

**Histology and Cell Biology**
Alex Braun, PhD  
Course Director  
Fernando Bruno, MD

**Human Behavior and Health**
Adetokunbo Shobaloju, MPH, MBBS  
Course Director

**Immunology and Microbiology**
Stephen Jones, PhD  
Course Director  
David Manna, PhD

**Law and Ethics**
Adetokunbo Shobaloju, MPH, MBBS  
Course Director

**Neuroanatomy**
Stephen Moorman, PhD  
Course Director & Anatomy Department Chairman  
Oana Rosenthal, MS

**Physiology**
Nilank Shah, PhD  
Course Director  
Gurjinder Kaur, PhD  
Tanchun Wang, PhD