**Integrated Pathways Curriculum** (for classes entering August 2013 or later)

This section contains the updated SUNY Downstate Integrated Pathways Curriculum for the College of Medicine and replaces the information found on pages 18-21 of the attached catalog for students entering SUNY Downstate's College of Medicine beginning in the 2013-2014 academic year. Students who entered prior to August 2013 will follow the curriculum listed on pages 18-21 in the Catalog.

The Integrated Pathways Curriculum is based on the following principles and goals:

**Principles and Goals of the Integrated Pathways Curriculum**

**Principle of Integration**

Curricular material is integrated within and between all four years of the curriculum while threading both clinical and basic science throughout the four years. This is so that our students experience the curriculum as an integrated whole. The curriculum explicitly defines learning outcomes and competencies that can be measured. These outcomes and competencies reflect a building of attitudes, knowledge, and skill level across the four years so that students progress along a continuum of depth of understanding of content and the adoption and mastering of skills. Our integrated curriculum welcomes every student into the profession of medicine on day one, and the values and behaviors we desire of our graduating students will be cultivated by our faculty and medical educational program. We make every effort to assure every student becomes the best physician possible.

**Principle of Collaboration**

Collaborative efforts involved faculty and staff from all areas of the College, our affiliates, our students, and important organizations such as the Alumni Association and other academic organizations. This effort will continue as the curriculum responds to changes in medical education. Collaborative teaching and learning are used in the curriculum.

**Principle of Relevance**

Medical science is rapidly changing and we are poised to identify and integrate on an ongoing basis new curricular materials that are relevant to training the best physicians. This means not only integrating new scientific knowledge and principles, but also assuring that we are training physicians with the skills they need to practice effectively in a changing health care environment. This includes such skills as the ability to work in teams and understand the health care system, practicing in a patient centered manner, and developing the ability to be a life-long learner who can evaluate and integrate new knowledge and skills throughout one's professional life.
The Integrated Pathways Curriculum is based upon the following six Domains of Competence.

<table>
<thead>
<tr>
<th>Domains of Competence</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSTEMS-BASED PRACTICE</td>
</tr>
<tr>
<td>Graduates must demonstrate an awareness of the relationship between themselves and the patient, community, and healthcare system as well as recognize the impact on optimizing patient care.</td>
</tr>
<tr>
<td>PROFESSIONALISM: Graduates must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population. Graduates must also assess personal values and priorities in order to maintain an appropriate balance of personal and professional commitments.</td>
</tr>
<tr>
<td>INTERPERSONAL AND COMMUNICATION SKILLS</td>
</tr>
<tr>
<td>Graduates must be able to demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their patients families, and professional associates.</td>
</tr>
<tr>
<td>PRACTICE-BASED LEARNING AND IMPROVEMENT</td>
</tr>
<tr>
<td>Graduates must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices.</td>
</tr>
<tr>
<td>PATIENT CARE</td>
</tr>
<tr>
<td>Graduates must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.</td>
</tr>
<tr>
<td>MEDICAL KNOWLEDGE</td>
</tr>
<tr>
<td>Graduates must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care.</td>
</tr>
</tbody>
</table>
The Integrated Pathways Curriculum is a four-year curriculum and is divided into three parts:

- Foundations of Medicine
- Core Clinical Medicine
- Advanced Clinical Medicine

The curriculum requires 155 weeks of instruction and 155 credits for graduation.

**Foundations of Medicine**
The first component, or 18 months of the Integrated Pathways Curriculum, is entitled "Foundations of Medicine." This pre-clerkship portion of the curriculum features larger, more integrated units rather than smaller, more numerous individual blocks. Each unit teaches related content from both years of the current curriculum (MS1 and MS2 years) in an integrated fashion. This allows students to learn normal structure and function in close proximity to abnormalities and disease. This structure allows connections to clinical material early in the curriculum. Clinical skills are taught as an integrated part of each unit. Each unit has a unit director and an interdisciplinary unit faculty. These are the six interdisciplinary units:

- Unit 1 Systems Overview: Human Structure and Function
- Unit 2 Basis of Disease I: Molecules to Cells
- Unit 3 Basis of Disease II: Infection and Host Defense
- Unit 4 Body Systems I: Gastrointestinal, Endocrine, and Reproduction
- Unit 5 Body Systems II: Cardiovascular, Renal, and Respiratory
- Unit 6 Body Systems III: Brain, Mind and Behavior

<table>
<thead>
<tr>
<th>Foundation Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Structure and Function</td>
<td>7</td>
</tr>
<tr>
<td>Molecules to Cells</td>
<td>9</td>
</tr>
<tr>
<td>Infection and Host Defense</td>
<td>13</td>
</tr>
<tr>
<td>Gastrointestinal, Endocrine, and Reproduction</td>
<td>10</td>
</tr>
<tr>
<td>Cardiovascular, Renal, and Respiratory</td>
<td>13</td>
</tr>
<tr>
<td>Brain, Mind and Behavior</td>
<td>11</td>
</tr>
</tbody>
</table>

Total 63 credits

**Core and Advanced Clinical Medicine**
The 3rd (Core Clinical Year) and 4th year (Advanced Clinical Year) include the integration of the current Anesthesia Clerkship into a larger Perioperative Care, Anesthesia, and Surgery
clerkship, adding a required longitudinal experience in primary care for all students, and beginning in 2016, the addition of new required elements in the 4th year. These new 4th year requirements include 4 weeks of Emergency Medicine (instead of 2 weeks), 4 weeks of a Diagnostic Imaging rotation, 2 weeks of Critical Care, and 4 weeks of Translational Science Selectives.

<table>
<thead>
<tr>
<th>Core and Advanced Clinical Years</th>
<th>Credits</th>
<th>Number of Weeks in Rotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transition to Clerkship</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Medicine</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Peri-operative Care, Anesthesia &amp; Surgery</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Women's Health</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Neurology</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Primary Care I: Family Practice or General (includes Longitudinal Experience)</td>
<td>6.5</td>
<td>6.5</td>
</tr>
<tr>
<td>Primary Care II: Geriatrics / Palliative Care</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Subinternship (Medicine or Pediatrics)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Diagnostic Imaging</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Critical Care</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Translational Science Selectives</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Transition to Residency</td>
<td>.5</td>
<td>.5</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>70</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electives</th>
<th>Number of Weeks in Rotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Required Clinical Elective Weeks</td>
<td>22 credits</td>
</tr>
<tr>
<td><strong>Total Clinical Requirement</strong></td>
<td>92 credits</td>
</tr>
<tr>
<td><strong>Total Requirement for Graduation</strong></td>
<td>155 credits (63 plus 92)</td>
</tr>
</tbody>
</table>

*Gateways 1, 2, 3, and 4*

The Gateways are evaluation points located at the following points of the curriculum; before the second year of the Foundations of Medicine curriculum, before entering the Core Clinical phase, before the Advanced Clinical phase and in the last year of the curriculum. These are points in the curriculum at which students reflect on their mastery of the six competencies and the faculty certify that the students meet expectations in the
competencies and are ready to proceed to the next portion of the curriculum, or in the case of Gateway 4, graduate.

Course Descriptions

Foundations of Medicine

The six interdisciplinary units in the Foundations of Medicine portion of the curriculum use a multidisciplinary, systems-based approach to teach the normal structure and function of the body while introducing students to basic clinical skills and abnormal structure and function. The disciplines (i.e., Gross Anatomy, Biochemistry, etc.) are integrated and organized into Units based either on foundational concepts (Units 1–3) or on organ systems (Units 4–6).

Each Unit incorporates multiple teaching modalities including lectures, case-based learning, team-based learning, Problem Oriented Patient Sessions (POPS), laboratories, and patient skill laboratories. Students begin to spend half days in physician’s offices during Unit 2 continuing through the year. Students are expected to take responsibility for ensuring that they obtain a conceptual understanding of subject matter in addition to knowledge of factual information. Weekly formative assessments, similar to those used at the end of unit summative assessments, will help students track their progress.

Unit 1. Systems Overview: Human Structure and Function

The first Unit begins with an overview of major organ systems that allows students to begin learning and practicing clinical skills such as listening to heart and lung sounds, palpation of major organs and measuring pulse and respiration rates. Students begin to learn the structure of the human body by examining prosections and then performing dissections intended to demonstrate the musculoskeletal systems and consequences of injury to these systems. This learning will be supplemented by the use of medical imaging such as radiographs and ultrasound. Students also gain a grounding in concepts such as homeostasis.

This unit also includes: Introduction to the doctor-patient relationship, biopsychosocial model and patient-centered communications skills; the seven dimensions of a symptoms as part of the history of present illness; learning the physical exam and its correlation to anatomy, introduction to evidence-based medicine.

Unit 2. Molecules to Cells

In Unit 2 students develop an understanding of the biochemical, molecular, cellular, and genetic basis for disease. Progressing from a visual understanding of the musculoskeletal system they explore cell and tissue structure and function based on diseases with both genetic and environmental origins. Among topics to be covered are the expression of genetic information, differences in structure and function of differentiated cells, protein and enzyme structure and function, energy generation by metabolism of basic foodstuffs and the role of nutrition in health and disease, early embryonic development, the cellular
basis of neoplasia, and the life cycle and function of red blood cells. Students will continue to practice and develop clinical skills related to the diseases under study.

This unit also includes: Taking a family history and a pedigree, medication history, empathy and building a doctor-patient relationship, introduction to medical ethics, biostatistics-probability, fundamentals of measurement, introduction to study design, principles of screening, public health; human development with focus on newborns and toddlers. Students begin to spend half days in doctor's offices.

**Unit 3. Infection & Host Defense**

Unit 3 introduces students to infectious diseases, the biology of the causative agents and the defense systems that protect against them both as defenders of the human body and as causes of disease when regulatory systems fail. Students extend their knowledge of blood cells by studying white blood cells and their role in defense against pathogens. They study the role of lymphocytes and antigen-presenting cells in humoral and cell-mediated immune responses along with understanding the body-wide distribution of lymphoid tissues and organs. Principles of neoplasia learned in Unit 2 will be extended by studying cancers of the lymphoid system, leukemias and lymphomas, and their treatment To understand the anatomical distribution of defense mechanisms and the sensitivity of respiratory passages to infectious agents, students will explore the anatomy of the head and neck and the susceptibility of these structures to infections by respiratory viruses. Diseases caused by disorders of the immune system such as allergies, inflammation, HIV infection, and autoimmunity will be examined in relation to specific diseases. The role the immune system plays in diseases of skin, muscles, bones and joints will also be a focus of this Unit.

This unit also includes: Taking a sexual history, making a problem list and summary, introduction to clinical reasoning, the hypothesis driven physical exam; study design; patient safety, public health, human development with a focus on pre-school and school age children. Students continue their experiences in the doctor’s offices

**Unit 4. Gastrointestinal, Endocrine and Reproductive Systems**

Unit 4 is the first of three units focused on defined organ systems. Fundamental knowledge acquired in Units 1 to 3 will be applied to disorders and diseases that affect the gastrointestinal, endocrine and reproductive systems. Initially students explore the structure of the gastrointestinal tract and the physiology and pathophysiology underlying its normal function and disorders that arise. Imaging techniques will help students relate the anatomy of the organs to their microscopic structure and the mechanisms underlying functionality. Inter-relationships between organs (e.g. bowel and liver) will be explored to understand digestion and uptake of nutrients and the role of nutrition in normal health or disease. The study of the endocrine system naturally follows learning about the gastrointestinal tract as student learn about diabetes, the thyroid and other hormonal systems. Finally, students will examine the structure and function of male and female reproductive systems and the control mechanisms that regulate their functioning. In an integrated fashion students will become familiar with diseases and disorders that affect
these systems including breast and uterine cancer and dysfunctions of the endocrine systems that regulate such organs.

This unit also includes: Explaining and planning with patients; health literacy; Focus on the Review of Systems and relevant physical exam for endocrine, gastrointestinal, and reproductive systems; Study design, statistical measurement; Medical ethics, Journal Club. Students continue experience in doctors' offices.

**Unit 5. Cardiovascular, Renal, Respiratory Systems**

After the summer, Unit 5 begins the second year of Foundations. Students will learn about the structure and function of the cardiovascular system and the effect of various diseases affecting it. Later, students will explore the functioning of the lungs and kidneys and their roles in maintaining homeostasis together with the consequences of diseases affecting these organs and their treatment. Since these organs act together to regulate normal conditions within the body, students will learn how their functions are integrated and what happens when this normal state is disrupted. Throughout the Unit students will apply their clinical skills and incorporate new information related to examination of the patient including EKG data interpretation and imaging techniques. Students will continue to practice and develop clinical skills related to the diseases under study and begin to practice taking a medical history and performing a physical exam in the hospital setting.

This unit also includes: Geriatric interview; behavior modification, motivational interviewing; focused history and physical exam relevant to cardiac, respiratory and renal diseases; problem lists incl. bio-psycho-social needs; preventive, and therapeutic plan of care; post-encounter notes; evaluate commercial pharmaceutical literature and diagnostic literature; fundamentals of study design; oral presentations. Students go to inpatient setting to practice taking medical histories, performing physical exams, preparing a differential diagnosis and an initial diagnostic and treatment plan for a hospitalized patient.

**Unit 6. Brain, Mind & Behavior**

Unit 6 is the last component of the Foundations of Medicine and is focused on understanding the central nervous system and its disorders. Initially students will examine the gross and microscopic structures of the various regions of the human brain using dissections, imaging and virtual microscopy. These studies will be combined with recognizing the effects of tumors and infections on the brain. Students will then learn to apply concepts of central neural pathways to the neurological aspect of the physical examination together with the effect of disorders such as epilepsy and stroke and demyelinating diseases. Finally students will explore how the brain determines aspects of human behavior and consciousness and the consequences of defects that lead to abnormal function and behavior (dementia, delirium, psychosis and anxiety or depression). Students will continue to practice and develop clinical skills related to the diseases under study.

This unit also includes: Patient-centered interviewing with the difficult patient; delivering bad news; palliative care and death and dying; focused history and physical exam relevant
to neurology and psychiatric diseases; write-ups including assessment and plan; evaluate therapeutic literature; search strategies; oral presentations; shared decision-making and design diagnostic strategies. Students go to inpatient setting to practice taking medical histories, performing physical exams, preparing a differential diagnosis and an initial diagnostic and treatment plan for a hospitalized patient.

Following the assessment week for Unit 6, students will have an interval to study for and pass the Step 1, United States Medical Licensing Exam (USMLE), one of the three exams required for licensure and also required for promotion to our next level of Core Clinical Medicine.

**Core Clinical Medicine (Clerkships) — 12 months**

Paired clerkships during the Core Clinical Medicine year to enhance interdisciplinary teaching across clerkships and support integration of relevant basic science knowledge.

<table>
<thead>
<tr>
<th>Transition to Clerkships</th>
<th>1 week (precedes clerkships)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women's Health</td>
<td>6 weeks</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>6 weeks</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>6 weeks</td>
</tr>
<tr>
<td>Neurology</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Career Exposure Elective</td>
<td>2 weeks</td>
</tr>
<tr>
<td>Internal Medicine</td>
<td>8 weeks</td>
</tr>
<tr>
<td>Primary Care Block</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Perioperative Care, Anesthesia, &amp; Surgery</td>
<td>10 weeks</td>
</tr>
<tr>
<td>Career Exposure Elective</td>
<td>2 weeks</td>
</tr>
<tr>
<td>Longitudinal Primary Care Rotation</td>
<td>½ day over 24 weeks of Medicine and Surgery Clerkships</td>
</tr>
</tbody>
</table>
**Advanced Clinical Medicine — 14 months**

Advanced Clinical Medicine year requires students to take the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Internship in Medicine or Pediatrics</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Diagnostic Imaging Rotation</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Translational science Selectives</td>
<td>4 weeks (two, 2 week selectives)</td>
</tr>
<tr>
<td>Critical Care Rotation</td>
<td>2 weeks</td>
</tr>
<tr>
<td>Geriatrics and Palliative Care</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Emergency Medicine Rotation</td>
<td>4 weeks</td>
</tr>
</tbody>
</table>

Students will have 5 months of elective time and seven weeks for vacation and residency interviews.

*Updated academic policies related to the Integrated Pathways Curriculum are published in the annual Student Handbook located on line at: [http://sls.downstate.edu/student_affairs/handbook.html](http://sls.downstate.edu/student_affairs/handbook.html)*
Transportation to SUNY Downstate

The SUNY Downstate Admissions Office is located at 450 Clarkson Avenue, just off New York Avenue (Building 2).

**BY AUTOMOBILE**

**From Manhattan:**

Manhattan Bridge: exit onto Flatbush Avenue. Continue approximately three and one-half miles to Parkside Avenue. Turn left onto Parkside Avenue and travel four blocks to New York Avenue. Turn right at New York Avenue and continue one block to Clarkson Avenue.

Brooklyn Bridge: stay to the left at the end of the bridge, following the ramp to Boerum Place, which becomes Adams Street. Continue along Adams Street to Atlantic Avenue. Turn left onto Atlantic Avenue and continue to Flatbush Avenue. Turn right onto Flatbush Avenue and continue two blocks to Parkside Avenue. Turn left onto Parkside Avenue and travel four blocks to New York Avenue. Turn right at New York Avenue and continue one block to Clarkson Avenue.

Brooklyn-Battery Tunnel (toll): exit onto the Brooklyn-Queens Expressway. Continue approximately one mile, staying to the left, and exit onto Prospect Expressway. Travel three exits to the Fort Hamilton Parkway exit. Continue through two traffic lights to Caton Avenue. Turn left onto Caton Avenue, and continue sixteen blocks to Flatbush Avenue. Turn left onto Flatbush Avenue and continue two blocks to Parkside Avenue. Turn right onto Parkside Avenue and travel four blocks to New York Avenue. Turn right at New York Avenue and continue one block to Clarkson Avenue.

**From Staten Island and Newark International Airport:**

Verrazzano Narrows Bridge (toll): follow bridge to Route 278, the Gowanus Expressway. Travel approximately five miles to the Prospect Expressway exit. Continue on the Prospect Expressway three exits to the Fort Hamilton Parkway exit. Travel along East 5 Street through two traffic lights to Caton Avenue. Turn left onto Caton Avenue, and continue sixteen blocks to Flatbush Avenue. Turn left onto Flatbush Avenue and continue two blocks to Parkside Avenue. Turn right onto Parkside Avenue and travel four blocks to New York Avenue. Turn right at New York Avenue and continue one block to Clarkson Avenue.

**From Long Island and Airports:**

Southern Long Island and JFK: West on Belt Parkway to North Conduit Boulevard exit (Exit 17W). Continue on North Conduit Boulevard for about 3/4 mile. Fork left onto Linden Boulevard, and take Linden Boulevard to New York Avenue. Right two blocks on New York Avenue to Clarkson Avenue.

Northern Long Island and LaGuardia: Take Grand Central Parkway to Jackie Robinson Pkwy (formerly Interboro Pkwy). Continue to Pennsylvania Avenue exit. Follow Pennsylvania Avenue to Linden Boulevard, turn right onto Linden. Take Linden Boulevard to New York Avenue. Right two blocks on New York Avenue to Clarkson Avenue.

**PARKING**

Valet Parking is available Mondays through Fridays from 6:00 a.m. to 6:00 p.m., located in front of the 445 Lenox Road hospital entrance at the valet parking booth. The fee is $10.00 (this service is not available on weekends or holidays). When the valet parking service is not available, a limited number of spaces for visitors are available at a nominal cost at the Center's Parking Garage on East 34th Street, between Linden Boulevard and Lenox Road. There are also several private parking lots in the area.

**BY RAILROAD**

**Long Island Railroad**

Take any train to the Jamaica station. Change to Brooklyn-bound train (track 3). Take to the Flatbush Avenue terminal. Follow subway directions from there.

**Metro-North Railroad**

Take any train to Grand Central Terminal. Change to Brooklyn-bound 4 or 5 trains. Follow subway directions from there.

**BY SUBWAY**

During rush hours, take the IRT Flatbush Avenue Line (#2 Seventh Avenue or #5 Lexington Avenue) trains to the Winthrop Street station. (Take any IRT Brooklyn-bound train (#2, 3, 4, or 5) to Nevins Street in Brooklyn, changing there for a #2 or #5 marked “Flatbush Avenue.” Note that the #5 runs only during rush hours.) Exit at Nostrand and Parkside avenues. Cross Nostrand Avenue and walk one block on Parkside Avenue until it ends at New York Avenue. Turn right onto New York Avenue. Cross New York Avenue and walk east on Clarkson Avenue until the entrance at 450 Clarkson Avenue. The Admissions Office is located at 450 Clarkson Avenue.

 Nights and outside of rush hours, take the subway to Church Street. Walk three short blocks east on Church Avenue to New York Avenue. Cross New York Avenue and walk three blocks to Clarkson Avenue, right to 450 Clarkson Avenue. Or transfer to an eastbound B-35 bus to the northbound B-44 at Church and New York avenues. (Downstate students and employees can call 718-270-2626 to arrange for transportation from Church Avenue.)

**BY BUS**

The B-12 and northbound B-44 buses stop at the corner of Clarkson and New York Avenues. The following lines connect with the B-12 along Clarkson Avenue: B-41, B-44, B-46, and B-49.
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Dean

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Mark Stewart, MD, PhD
Dean and Vice Dean for Research

SCHOOL OF PUBLIC HEALTH
Pascal James Imperato, MD, MPH&TM
Founding Dean

COLLEGE OF NURSING
Daisy Cruz-Richman, PhD, RN
Dean

COLLEGE OF HEALTH RELATED PROFESSIONS
Dawn Morton-Rias, EdD, PA-C
Dean

Lists as of 8/20/12
MISSION, VISION AND VALUES

Mission
SUNY Downstate Medical Center – Brooklyn’s Academic Medical Center
• To provide outstanding education of physicians, scientists, nurses and other healthcare professionals
• To advance knowledge through cutting edge research and translate it into practice
• To care for and improve the lives of our globally diverse communities
• To foster an environment that embraces cultural diversity

Vision
We will be nationally recognized for improving people’s lives by providing excellent education for healthcare professionals, advancing research in biomedical science, health care and public health, and delivering the highest quality, patient-centered care.

Values
PRIDE To take satisfaction in the work we do every day, and to value our collective contributions to the Downstate community.
Professionalism We commit to the highest standards of ethical behavior and exemplary performance in education, research, and patient care.
Respect We value the contributions, ideas and opinions of our students, coworkers, colleagues, patients and partnering organizations.
Innovation We research and develop new and creative approaches and services for the anticipated changes in healthcare.
Diversity We embrace our rich diversity and commit to an inclusive and nurturing environment.
Excellence We commit to providing the highest quality of education and service to our students, patients and community by holding ourselves, our coworkers and our leaders to high standards of performance.

SUNY DOWNSTATE COLLEGE OF MEDICINE

The College of Medicine grants the MD degree; it also sponsors, with the School of Graduate Studies, a combined MD/PhD degree. The College of Medicine curriculum is organ-based. The first two years emphasize the study of the basic sciences, while the third and fourth year are primarily devoted to clinical medicine. The curriculum includes a clinical medicine component beginning in the first year that introduces students to ambulatory patient care and clinical skills development. In the third and fourth years, the emphasis is on clinical medicine, and time is provided for students to pursue their research interests.

Medical students can earn a Master of Public Health degree from the School of Public Health, while at the same time earning their MD degree. Some students choose to complete the MPH by taking summer courses starting before the first year of medical school. Others take a year off between the third and fourth year of medical school to complete the MPH.

SCHOOL OF GRADUATE STUDIES

The School of Graduate Studies offers three PhD degree-granting programs: Molecular and Cellular Biology, Neural and Behavioral Science, and a joint PhD program in Biomedical Engineering in collaboration with the Brooklyn campus of NYU Polytechnic University. Students should consult the website www.downstate.edu/grad for the most recent information on program offerings.

ACCREDITATION

SUNY Downstate is accredited by the Middle States Commission on Higher Education. The College of Medicine is fully accredited by the Liaison Committee on Medical Education.
The Founding of Downstate Medical Center

SUNY Downstate Medical Center had its beginnings as a small charitable medical service set up in 1856 by a group of German physicians. This free dispensary, organized to treat indigent German-Americans living in Brooklyn, was staffed by five physicians. The original intention was to build a large hospital to care for the German population of Brooklyn. But changing population trends, which brought a largely Irish patient load to the dispensary, necessitated a revision of this plan.

In 1857, physicians from the German General Dispensary, then located on Court Street, resolved to organize a charitable institution in the City of Brooklyn, to be called St. John's Hospital. From November 7 until December 23 of that year, the dispensary was called The St. John's Hospital; on December 23, the name of the hospital was changed to The Long Island Hospital and Medical College. It was on this date that a medical college with a hospital was first projected.

Dr. Louis Bauer and Dr. John Byrne, the prime movers in the establishment of the medical college, were trained in Europe, where it was customary for medical schools to be associated with hospitals. The two physicians naturally wanted to adopt this system to prepare the future physicians of Brooklyn. A bill to incorporate the Long Island College Hospital of the City of Brooklyn was introduced in the State Legislature on January 20, 1858, and passed on March 6. The hospital’s charter empowered 25 regents to operate a hospital and to confer degrees on candidates 21 years of age or older, who had passed three years of preceptorship under a practicing physician and completed two courses of lectures at the hospital.

Almost immediately after the charter was signed, the Perry Mansion, located in Brooklyn Heights, was purchased to house the new medical complex. The official inauguration of the Long Island College Hospital took place June 3. Financial difficulties beset the new institution almost immediately, slowing down efforts to open the medical school. The hospital itself was forced to close in late September 1859.

Meanwhile, several outstanding physicians were secured to fill the professorships at the college, and on March 29, 1860, the institution reopened, following financial arrangements underwriting the expense of the collegiate department and settling various liens.

The following day, the instruction of students began. The first teaching faculty was a distinguished one. Most eminent of all was Dr. Austin Flint, Sr., professor of practical medicine and pathology, who had been a professor of medicine at Rush Medical College in Chicago.

A medical student’s training in 1860 consisted of his three-year preceptorship under the direction of a practicing physician and attendance at two courses of lectures of at least sixteen weeks each. The lectures that were given one year were repeated the next, sometimes verbatim, so many students took their first course of lectures at one school and their second at another. The first class had 57 students, as well as a number of graduates of other institutions. The first commencement took place July 24, 1860, with 21 students graduating.

In 1861, in anticipation of the medical needs of the Civil War, the curriculum included a one-month course on military surgery, dissection, and clinical instruction on the wards. By 1869, major changes were introduced into the teaching curriculum. Daily class examinations were instituted to ensure more exact knowledge, especially in the demonstrative and elementary branches. Another change, made in 1872, was the establishment of a reading and recitation term that began early in October and extended to the beginning of the regular term in March. This term included dissection and clinical instruction as well as reading and quizzes.

By 1879, the faculty of the Long Island College Hospital concluded that the system of teaching medicine in the United States was radically wrong. They debated the possibility of instituting a compulsory, full-graded, three-year course of instruction, but abandoned the idea because of their fears that such a plan would result in the loss of many students, when the college was entirely dependent for its existence on students’ fees. Certain changes were made, however, to improve the curriculum. The regular term was lengthened from sixteen weeks to five months, but the four-month reading and recitation term remained optional. Thus, a total of eighteen months’ instruction was available to any student electing two regular and two reading and recitation terms.

Between 1888 and 1897, the Long Island College Hospital grew rapidly. The Hoagland Laboratory building, built primarily for research in bacteriology, was constructed. At its opening, it was considered one of the best-equipped buildings for research and medical training in the country. In December 1897, the Polhemus Memorial Clinic Building was completed. The new building, eight stories high, was erected on the southwest corner of Henry and Amity streets.
By this time, New York State law required that a student take three courses of lectures in three different years. The system of having a regular term of five months and an optional reading term was retained. The entering class of 1897-1898 began the first four-year graded course of instruction. The reading term was abolished, and the school year lasted seven months. In 1897, the student fees were raised to $185 and $190. In the period from 1889 to 1909, the average number of students in the school was 310, and the average number in the graduating class was 62.

During the years immediately before and after World War I, many additional changes occurred at Long Island College Hospital. Admission was opened to women; postgraduate teaching was instituted; a new wing increased the number of beds to 500; and affiliations were established with other Brooklyn hospitals.

In 1930, the college and hospital were separated from one another so that each would be under its own governing board. The college was conducting much of its clinical teaching in other hospitals throughout the borough, and it seemed preferable that it not be governed by the board of only one hospital. The college became the Long Island College of Medicine.

Other changes occurring during the 1930s included the construction of the Polak Memorial Laboratory, housing laboratories in bacteriology, histology, physiology, pathology, gynecology, and surgery. In 1935, 500 beds at Kings County Hospital were set aside in a college division for the clinical instruction of students.

In the 1940s, full-time chiefs were appointed in all the clinical departments, training in psychiatry was offered within a separate department, and Maimonides Hospital and the Veterans Administration Hospital in Fort Hamilton became affiliates, along with a number of other local hospitals. In 1946, the third-year curriculum was changed so that nearly two-thirds of the work consisted of clinical clerkships.

In 1945, the college purchased a six-and-a-half-acre tract of land that eventually became the site of Downstate Medical Center. After approval by a faculty committee and the board of trustees of the Long Island College of Medicine, the board of managers of the Alumni Association, the trustees of the State University of New York, and the State Board of Regents, the State Legislature in 1950 passed a bill legalizing the merger of the Long Island College of Medicine and the State University to form Downstate Medical Center.

The establishment in 1966 of the School of Graduate Studies, the College of Health Related Professions, and the College of Nursing; the construction of the Basic Sciences Building in 1956; student residence halls in 1965; State University Hospital in 1966; the Student Center in 1967; the nurses’ residence in 1968; and the Health Science Education Building in 1992 completed the transition of the medical school as it is now known from its early days as the German General Dispensary on Court Street.*

Excerpted with permission from the New York State Journal of Medicine, July 1976. It was reprinted in Alumni Today, Spring 1996, with the permission of the Medical Society of the State of New York.

*Update: Since this account was written, the medical center has expanded even further. The School of Public Health was established in 2009 and in 2011, Downstate acquired Long Island College Hospital, thus reuniting with its historic past.
Admissions

Admission information is revised annually and is available in the Medical School Admission Requirements Handbook, published by the Association of American Medical Colleges, and from SUNY Downstate Medical Center's Admissions Office. Current information about Downstate's admissions procedures, requirements, and policies are available on its website: www.downstate.edu in the section titled "Prospective Students."

ADMISSIONS REQUIREMENTS

An applicant must have completed at least 90 semester credits of study in a regionally accredited (e.g., Middle States Association of Colleges and Schools) college or university, as listed by the Council for Higher Education Accreditation (CHEA). Admissions preference is given to applicants who have earned or will have earned a bachelor’s degree in a regionally accredited college or university.

Admissions preference is also given to applicants who have completed prerequisite courses in four-year colleges/universities in the United States (not in study abroad programs); and to applicants who have completed science prerequisites in a traditional classroom setting (not through distance learning).

The Committee on Admissions looks favorably on a program of study that includes at least one year of college mathematics and advanced science subjects. A course in biochemistry is strongly recommended. Other desirable courses include anatomy, physiology, histology, cell biology, genetics, neuroscience, a course in statistics or biostatistics, and courses in the humanities and social sciences. The Admissions Committee also seeks individuals who have a demonstrated commitment to community/social service outreach activities.

PREREQUISITE COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English *</td>
<td>6</td>
</tr>
<tr>
<td>General Biology or Zoology including labs</td>
<td>8</td>
</tr>
<tr>
<td>General Physics including labs</td>
<td>8</td>
</tr>
<tr>
<td>General or Inorganic Chemistry including labs**</td>
<td>8</td>
</tr>
<tr>
<td>Organic Chemistry including labs</td>
<td>8</td>
</tr>
</tbody>
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Note: If the applicant's college follows the quarter system, usually three courses equate to two courses under the semester system. Applicants should check very carefully to be sure that they have completed the required number of courses plus labs. If the college has separate lecture and lab courses, the applicant may need to take more than the indicated number of credit hours above, to fulfill course sequences.

* In general, the Committee does not accept English courses taken abroad to fulfill the English admission requirement. Courses that have the English department prefix are accepted to fulfill the English requirement. If an applicant has an interdisciplinary course or if their college or university accepts other courses to fulfill writing or English requirements, they should submit a statement from their college as part of the application process (see the website for instructions).

** If the college/university offers an intensive one-semester general or inorganic chemistry course with lab for qualified students, and considers this equivalent to the traditional two-semester course, applicants may use this to satisfy our requirement for general chemistry. However, they should also take a higher-level chemistry course, preferably biochemistry. In addition, they should indicate on the Supplemental Application that the one-semester course is an advanced general or inorganic chemistry course, and attach a copy of the catalog description or a letter from the Department of Chemistry verifying this (see Admissions website for instructions).
APPLICATION PROCEDURES

HOW TO APPLY
SUNY Downstate participates in the American Medical Colleges’ Application Service (AMCAS) system. Applicants should complete the AMCAS web application at www.amcas.org.

AMCAS
Section for Student Services
Association of American Medical Colleges
2501 M Street, NW, Lobby-26
Washington, DC 20037-1300
(202) 828-0600

Early application is strongly recommended. Applicants should complete the AMCAS web application prior to September 1.

The applicant is responsible for submitting official transcripts from all universities attended to AMCAS. Official university transcripts should not be sent to the SUNY Downstate Admissions Office unless a specific transcript has been requested.

MEDICAL COLLEGE ADMISSIONS TEST (MCAT)
The MCAT exam is administered multiple times from January through early September. The Committee on Admissions recommends that applicants take the MCAT in the Spring prior to the application year. The MCAT scores submitted must be no older than three years prior to the date of the applicant’s planned enrollment. Applications are not reviewed without MCAT scores. Component scores for each MCAT series are looked at individually, and all of the scores on MCATs taken by the applicant are reviewed. Applicants who take the MCAT under nonstandard conditions are considered on the same basis as all other applicants.

For additional useful information, including registration, test dates, fees, fee waivers, and practice questions, visit www.aamc.org/students/applying/mcat/

Or contact:
Association of American Medical Colleges
Medical College Admission Test
2450 N St., NW
Washington, DC 20037
Phone: 202-828-0690
Email: mcat@aamc.org

See the College of Medicine website at www.downstate.edu to determine if a previous MCAT score is considered current for this application cycle.

LETTERS OF RECOMMENDATION
All letters (packet or individual) must be submitted on letterhead, and must be signed by the letter writer. Letters not meeting these requirements will not be considered. All letters must be submitted electronically—through the AMCAS letter service, Virtual Evals, or Interfolio.

If an applicant submits a packet of letters (e.g., from health professions advisor or health professions committee) through AMCAS, Virtual Evals, or Interfolio, we accept all the letters included in the packet. Applicants should ensure that at least one of the letters is from a science professor who has taught them in a biology, chemistry, or physics course. Guidelines for Letters of Recommendation may be found on the website.

SUPPLEMENTAL APPLICATION AND FEE
All applicants must complete a SUNY Downstate Supplemental Application (secondary) in order to have a complete application on file. Upon our receipt of a verified AMCAS application, applicants are sent an email with the link to SUNY Downstate’s Supplemental Application. A completed Supplemental Application must be received by SUNY Downstate, in order to have a completed application for review by the Admissions Committee.

SUNY DOWNSTATE APPLICATION PROCESSING FEE
All applicants must pay a nonrefundable Supplemental Application processing fee by credit card, or have an approved AMCAS fee waiver.

Applicants may submit their application fee by credit card (Visa or MasterCard), following the instructions on the SUNY Downstate College of Medicine Supplemental Application form.

APPLICATION DEADLINES
The deadline for submitting an AMCAS application is December 1. The deadline for having a completed application on file in the Admissions Office is January 15. Incomplete applications will not be reviewed after this date. Current information about our admissions deadlines are available on the Admissions website for the College of Medicine.

APPLICATION CHECKLIST
The requirements for a complete application are posted on the Admissions website annually. A complete application currently consists of the following:

1. American Medical College Application Service (AMCAS) Application
2. SUNY Downstate Medical Center Supplemental Application also known as the “secondary” application.
3. A nonrefundable Supplemental Application Processing Fee or an approved AMCAS fee waiver
4. Medical College Admission Test (MCAT) scores as required
5. Letter of recommendation from premedical advisor or committee or two individual faculty letters as required. Read the requirements for letters of recommendation on the SUNY Downstate website very carefully as your letter may not be accepted if it does not meet our guidelines.
STUDENTS EDUCATED ABROAD
For students who are educated abroad, a minimum of two full-time semesters (one academic year) of college study at a CHEA regionally accredited college/university in the United States prior to application is required. In addition, the applicant must demonstrate English proficiency, both verbally and in writing, if the prior medium of instruction was in another language. If a substantial amount of the applicant’s education has been completed abroad, or if the applicant has completed science prerequisites abroad, he/she is required to submit a course-by-course educational credentials evaluation from a National Association of Credential Evaluation Services (NACES) agency, such as World Educational Services, to enable the Committee on Admissions to assess prior academic performance.

APPLICATION STATUS
It is the applicant’s responsibility to ensure that a complete application is on file. Applicants may monitor receipt of their documents by accessing their AMCAS admissions checklist.

Once an application becomes complete, it will be reviewed, and applicants will be notified of their status, by email. Applications are not reviewed in the order in which they are completed, so an applicant may not receive communication immediately. See the Downstate Admissions website for more information.

Applicants should not telephone the Admissions Office regarding their application status. Downstate will make every effort to keep applicants informed of the status of their application by email.

INTERVIEWS
Invitations for a personal interview are offered only to applicants whose qualifications are competitive for admission. The interview provides a means for the College of Medicine and the applicant to learn more about each other. It also offers the opportunity for discussion and clarification of information from the application. Applicants are invited for interviews beginning in September. See the Downstate Admissions website for more information.

ACCEPTANCES
Acceptance letters are mailed beginning in mid-October and continue until the class is filled (“rolling admissions”). An alternate list is maintained throughout the summer, until registration. Applicants accepted for admission are required to reserve their place in the class by submitting a deposit between May 1- May 15, which will be applied toward the first semester’s tuition. The deposit is nonrefundable after May 15.

CERTIPHI SCREENING CRIMINAL BACKGROUND CHECK
All acceptance letters are conditional pending a satisfactory criminal background report.

In addition, all accepted students are required to complete the American Heart Association’s Healthcare Provider course. This is the only course that is accepted.

See the American Heart Association’s website for a list of where courses are given within the applicant’s geographic location. Additional requirements for matriculation, such as satisfactory health forms, submission of official transcripts, and any other requirements, are specified in the acceptance letter.

DEFERRALS
Accepted applicants may request a deferral for one year in order to participate in educational activities or social service projects. See the Downstate Admissions website for more information.

WITHDRAWALS
Applicants who decide to withdraw their application from consideration should notify the Office of Admissions immediately by sending an email to medadmissions@downstate.edu/.

RE-APPLICANTS
Re-applicants must adhere to the same policies, procedures and deadlines as first time applicants. Please see the website for more detailed instructions.

EARLY DECISION
An applicant interested in SUNY Downstate may apply as an Early Decision applicant and receive the admissions decision by October 1 of the application year. If the applicant is not accepted as of October 1, he/she may then also apply to other medical schools as desired. All requirements for Early Decision are the same as regular admissions, but the deadlines differ. See the Admissions website for additional information.

MD/PHD PROGRAM
The College of Medicine and the School of Graduate Studies jointly sponsor a program leading to a combined MD/PhD degree. This dual-degree program combines a medical education with an intensive research experience. It is designed for students who are interested in pursuing a career in academic medicine. Students are supported with a stipend and a tuition scholarship throughout the duration of the program.

Applicants to this program must apply for admission separately to both the College of Medicine and the School of Graduate Studies. They are considered for the combined MD/PhD as part of the admissions process in both schools. A completed application should be on file as early as possible. For current information about deadlines, priority deadlines, and application information, please see the Admissions website.

To obtain a School of Graduate Studies application and a letter of recommendation form, go to www.downstate.edu/grad. When filing your AMCAS application, you should indicate “Combined Medical Degree/PhD.”
MD/MPH PROGRAM
This is a concurrent degree program (two degrees pursued simultaneously) in the College of Medicine and the School of Public Health. Course offerings have been synchronized so that students may receive both degrees at the end of four years. The emphasis of the MPH program is on urban health issues. Students may choose to complete the MPH program in one of five core areas: Biostatistics, Community Health Sciences, Environmental and Occupational Health Sciences, Epidemiology, or Health Policy and Management. For more information about the MPH program, including interviews with the MD/MPH students and/or the MD/MPH application, visit www.downstate.edu/publichealth/.

Two separate applications are required: MD through AMCAS; and MPH locally. When filing the AMCAS application, indicate “Combined Medical Degree/Graduate.” For more information about application deadlines and procedures, see the MD/MPH website in the School of Public Health.

TRANSFER ADMISSIONS POLICY
Admission to advanced standing at the College of Medicine is limited to U.S. citizens or permanent residents who are currently registered, matriculated, in good standing, and in attendance as second-year medical students in an LCME (Liaison Committee on Medical Education) accredited College of Medicine in the United States. Individuals who have earned the MD degree are not considered for transfer. Applications are accepted to the third-year class only.

The Admissions Committee takes into consideration as much information as possible regarding an applicant’s total qualifications for the study and practice of medicine. Decisions regarding admission are based on a number of factors including prior academic performance, particularly in medical school; letters of recommendation; Medical College Admissions Test (MCAT) scores; Step 1 of the United States Medical Licensing Exam (USMLE); and communication skills, character, personal skills and motivation for medicine, as demonstrated through letters of recommendation and the personal interview.

TRANSFER ADMISSIONS REQUIREMENTS

Premedical Education
Only applicants who qualify for admission to the first-year class, in terms of premedical education, will be considered for admission to the third-year class. For more detailed information, please see the “Transfer Admissions” section of the Admissions website.

Medical Education
In addition to meeting all premedical requirements, applicants for admission to the third-year class must have satisfactorily completed a curriculum comparable to the pre-clerkship curriculum at SUNY Downstate in an LCME-accredited medical school.

Transfer Application Procedures
Transfer applications are made available only in January of each year. Information about available positions, transfer application procedures, and requirements may be found in the “Transfer Admissions” section of the Admissions website.
Current information regarding tuition charges and fees appears in the appendix of the Student Handbook, which is published and updated annually. Current tuition, fees, and financial aid information are available on the institutional website, www.downstate.edu.

**Tuition**

**FULL-TIME STUDENTS**

Tuition is determined annually by the SUNY Board of Trustees and is subject to change. Applicants should check Downstate’s website for the most up-to-date information on tuition and cost of education.

Payment is generally made in two parts, the exact dates being determined each year. Students leaving school prior to the established payment dates are responsible for paying tuition for any time attended during the academic year. Liability for tuition is determined on a semester basis using the academic calendar and SUNY policy for tuition liability and refunds.

All medical students (except transfer students) are obligated to pay at least eight full semesters of tuition. Transfer students are obligated to pay tuition equivalent to their time of attendance—e.g., third-year transfer students pay four semesters of full-time tuition. Students who encounter academic difficulty and are required to repeat the year or other educational activities as determined by the faculty will incur obligations for more than eight semesters of tuition.

**PART-TIME STUDENTS**

Undergraduate students taking less than a full schedule (fewer than 12 credit hours) per semester are considered part-time students and are billed accordingly. As part-time students, they are ineligible for TAP, but may be eligible for other forms of aid depending on credit load. Students returning from a leave of absence may also be charged in this manner, depending on when they return and their schedule.

**REFUNDS**

Students leaving school for any reason are entitled to a refund or are liable for payment of tuition as indicated in the Student Handbook.

**DEFERRAL OF TUITION PAYMENT**

Deferral of tuition payment and dorm-rent payment can be obtained only by presenting appropriate documentation to the Office of Financial Aid by the date established each semester.

**LATE PAYMENT FEE**

Students who do not settle their account as requested will be assessed a late-payment fee. Student accounts past due after the end of the term may also be subject to assessment of interest and other collection costs.

**TUITION AND FEE INCREASES**

Tuition and fees are subject to amendment at any time at the discretion of the Board of Trustees of the State University of New York. Every effort will be made to provide advance notice of such changes.

**RETURN OF TITLE IV FINANCIAL AID**

Students leaving the institution may be liable to return any Title IV financial aid that has not been “earned” based on federal regulations. The amount of aid earned increases as the term progresses. If a student leaves early in the semester, he or she will have earned only a small portion of aid; if he or she leaves later, a larger portion of aid will have been earned.

Once a student has completed 60% of the term, he or she will have earned all (100%) of the Title IV Financial Aid. If a student leaves before completing 60% of the term, he or she will have to repay any “unearned” aid funds that were already disbursed.
Fees

Current fee information is on the website and in the Student Handbook.

COLLEGE FEES

The college fee for all full-time students is $12.50 per semester; for part-time students, $0.85 per credit.

FEE POLICIES 2012-2013
All fees are payable to SUNY Downstate. Fees are 2011-2013 rates. Current fees are listed in the Student Handbook.

- Drop/Add Fee: $20.00
- Late Registration: $40.00
- Duplicate Diploma: $30.00
- Mailing Fee: $9.00
- Licensure: $15.00
- Transcripts: $5.00
- Mailbox Key Replacement: $20.00
- Carrel Key Replacement: $20.00
- Late Payment Fee: Up to $120 per billing

STUDENT HEALTH FEES
The student health fee for all full-time students is $56.50 per semester prorated to $4.71 per credit for part-time students. The student health fee is mandatory.

INTERNATIONAL STUDENT HEALTH INSURANCE
Students attending on an international student visa (F-1, J-1) are required to pay for SUNY-sponsored health insurance, the exact amounts to be determined each year by the State University of New York System Administration.

RESIDENCE HALLS RENTAL—REFUNDS/LIABILITY/DEPOSITS
1. All students must pay an advance room deposit of $500, payable to SUNY, at the time they submit their license on application for on-campus housing. This deposit should accompany the license and is nonrefundable 60 days prior to the start date of your lease. Students who defer payment of their deposit based on financial aid and who fail to notify the housing office in writing by the cut off date of a decision not to take on-campus housing will be billed $500.

2. Once either a single or married student-licensee assumes occupancy during the academic year, he or she is fully liable for the balance of the academic-year rental except as indicated in #4 below. For rent-liability purposes, the academic year is considered to be from the day before the beginning of the academic year for a specific program and class year to the day after the last day required by the academic program (including Board Exams).

3. Payment of the academic-year rental obligation for single students may be made in two installments, during fall and spring registration. Married student-licensees are permitted to pay on a monthly basis, but will forfeit this privilege if they fail behind in their payments. Student-licensees who intend to pay their rent from financial aid funds must obtain a letter of deferment from the Office of Financial Aid and present it to the Bursar’s Office during registration. Advance deposits paid may be deducted from the fall payment.

4. The summer period is considered to be from June 1 through August 31. Liability for rent during the summer period is based on actual occupancy, and is due on or before June 5. A student-licensee who vacates prior to the expiration of an academic year will be fully liable for the full academic-year rental, except in the following instances:
   a. Withdrawal due to induction into the military.
   b. Withdrawal due to circumstances beyond the control of the student (generally, illness or illness in family).
   c. Withdrawal due to clinical work or coursework taken at other institutions beyond the New York City metropolitan area.
RETURNED CHECKS
A service charge is imposed on checks returned from the bank for any reason (insufficient funds, closed account, etc.). The service charge is in accordance with State University Policy Item No. 050, which states: “Each campus may levy a service charge of $20 for checks which are returned unpaid by the bank against which they are drawn.” Checks given in payment of tuition and fees that are returned by the bank after the tuition-payment deadline are subject to a $40 late-payment fee.

Residency Guidelines

NEW YORK STATE RESIDENCY GUIDELINES FOR TUITION DETERMINATION
An individual’s domicile is that place where one maintains a permanent home and to which one intends to return. A residence hall is generally not considered a permanent home, and additional documentation is required for exceptions.

The deadline for change of residency by matriculated students with appropriate documentation is one month prior to the registration date for your college for the next semester (you must file a change for residency status six weeks prior to the registration deadline for it to be in effect). The application for continuing/returning students is available in the Office of the Registrar.

NEW YORK STATE RESIDENCY DETERMINATION
Residency applications for in-state versus out-of-state tuition rates for entering students are made by filing an application through the Office of Student Admissions.

A U.S. citizen or permanent resident of the United States whose domicile has been in New York State for a one-year period prior to registration pays in-state tuition rates. Persons who do not meet this one-year requirement are out-of-state residents and pay out-of-state tuition rates. In-state rates will be applied to members of the U.S. Armed Forces, while on full-time active duty in New York State. This classification is provided to the eligible individual only and not to the spouse or dependents of such person.

Individuals who are not U.S. citizens or permanent residents of the United States must provide proof of immigration status before a residency determination can be made. Students on a temporary immigration status, aliens not lawfully present in the United States, and students awaiting approval of an application for a change of immigration status are generally not eligible for New York State residency for tuition purposes.

Each case is considered individually, following State University of New York’s “Administrative Policies on the Establishment of Residence for Tuition Purposes.”

See the Downstate website for the most current information.
Current information appears on the institutional website (www.downstate.edu).

PHILOSOPHY AND PURPOSE
A student who has been admitted to SUNY Downstate should not be denied an education due to a lack of funds. However, the primary responsibility for meeting educational expenses rests with the student and his or her family.

The purpose of Downstate’s financial aid program is to provide assistance to students who cannot meet the entire cost of their education and to ease the burden for families more able to assist the student. To achieve this goal, a program of institutionally administered financial aid is coordinated with aid programs from outside agencies. Aid from Downstate is intended primarily for those students who need additional aid beyond what is available from outside sources.

WHAT IS FINANCIAL AID?
Simply stated, financial aid is any grant, scholarship, or loan offered for the express purpose of helping a student meet education-related expenses. Such aid is usually provided by or through colleges, federal and state agencies, and foundations and corporations.

Grants and scholarships are generally regarded as “gift” assistance and need not be repaid, although they may carry certain provisions to which one must adhere. Loans are borrowed money, offered at various interest rates, which can be repaid over an extended period after the student leaves the institution. Federal work-study jobs are available to students who have financial need and wish to earn money for educational expenses.

HOW TO APPLY FOR FINANCIAL AID
More detailed information is updated annually on Downstate’s Financial Aid website: http://sls.downstate.edu/financial_aid.

1. Free Application for Federal Student Aid (FAFSA)
Students who know that they will need financial aid should complete the Free Application for Federal Student Aid (FAFSA) as soon as possible after January 1 each year, whether or not they have been admitted to Downstate. Students should file before March 1 for priority aid.

If a student cannot file taxes for the year prior to March 1, taxes should be estimated as closely as possible and so indicated. SUNY Downstate must be included as a college choice; its Title IV school code is 002839. All questions on the FAFSA must be answered. Filing can be done on the web at http://fafsa.ed.gov.

2. Institutional Application
All students desiring aid must submit an institutional application. The paper application is available at the Office of Financial Aid, or it may be downloaded from the web.

3. Student Aid Report (SAR)
As a result of filing the FAFSA, a student receives a Student Aid Report (SAR), either by mail or by e-mail if an e-mail address was provided. The SAR summarizes the information completed on the FAFSA and includes Estimated Family Contribution. Students should review the SAR, providing any requested information or making corrections, according to instructions.

4. Federal Direct Loans
Unsubsidized Direct Loans are offered to all students who are eligible and who submit a FAFSA and an Institutional Application. The maximum eligibility is shown on the award letter.

Students new to Downstate will receive information about how to sign a Master Promissory Note. Once the note has been signed, it remains in place for future years. The loan funding is forwarded to the Bursar’s Office. After school charges are paid from the loan fund, the student receives the remainder.

5. Scholarships
Downstate participates in federal and state need-based programs that require parental information submitted annually on the FAFSA, regardless of dependency status. If parental information is provided annually, a student is automatically considered for all scholarships available through Downstate. Scholarship amounts are determined each year, and prior-year amounts are not necessarily maintained.
WHAT IS FINANCIAL NEED?
A student is determined to be in need of financial aid when the calculated contribution based on income and assets from all sources is less than the sum of the student’s cost of attendance at the school. Financial need is the total sum remaining after all of an applicant’s resources (parental contribution, spouse’s earnings, veterans benefits, external scholarships, funds from others, savings, etc.), as measured by the FAFSA (Free Application for Federal Student Aid) have been subtracted from the school’s approved student budget. More simply stated: Cost of attendance minus expected student and family contribution equals financial need.

HOW COST OF ATTENDANCE IS DETERMINED
Cost of attendance is derived from a standard “student expense budget” which includes tuition and fees, room and board, personal expenses, books supplies, and transportation. Some of these are considered “direct expenses” (those paid to Downstate, e.g., tuition), while others are indirect expenses such as food and transportation. This budget provides for a moderate standard of living, neither bare bones nor luxurious. Only expenses directly attributed to a student’s costs may be used in establishing a budget. The average cost of books and living expenses is reviewed annually by the Office of Financial Aid. The school-approved budget is computed for actual periods when the student is enrolled.

BUDGET ADJUSTMENTS
Adjustments to student budgets are made on a case-by-case basis. If a student has expenses beyond his or her control that are not included in the normal student budget, he or she may apply for a budget adjustment. Examples of possible adjustments include:

- Out-of-pocket (uninsured) medical or dental costs
- Day-care expenses for children if the student’s spouse is employed or a full-time student, or if the student is a single parent

Other expenses are allowed only if they are necessary and directly related to attendance at Downstate.

To apply for a budget adjustment, a student must: (1) complete a form, available from the Office of Financial Aid; (2) write a letter describing the need; and (3) provide documentation that verifies statements in the letter (e.g., dental bills, child-care receipts).

WHAT IS AN EXPECTED FAMILY CONTRIBUTION?
The “expected contribution” is derived from the data submitted in the FAFSA. The formula used (Federal Methodology) analyzes the information submitted and determines a student’s potential for covering educational costs. This is done on an annual basis.

Students may actually pay more or less than the family contribution. The expected contribution is not a prediction of how much cash a student actually has on hand, nor a value judgment about how a student’s current income or savings ought to be used. Rather it is an estimate of a student’s capacity over time to absorb some of the costs of education. The estimate reflects how much responsibility a student has, relative to others, but it makes no particular assumptions about how a student will discharge his or her responsibilities. Students with special family circumstances are encouraged to discuss their situation with the Office of Financial Aid.

ANNUAL RENEWAL OF AID
The amount of a financial aid award will be reetermined each year. Students must reapply annually.

NOTIFICATION OF FINANCIAL AID AWARD
Official notification of financial aid awards is sent to applicants in the spring. Students who submit late applications may not receive award notifications prior to fall matriculation. The award notification identifies the period of aid, amount of aid, and sources of financial aid funds. The cost of attendance and the student’s other assumed or estimated financial resources are also included in the award letter. Since it takes several days for the college to receive funds after registration, students should be prepared to meet expenses for the first few weeks of the term from their own resources.

OUTSIDE SCHOLARSHIP ASSISTANCE
Any outside scholarship assistance received by a financial aid applicant will first be used to reduce loan assistance from SUNY Downstate Medical Center. In rare instances, outside scholarship assistance may also reduce scholarship/grant assistance from SUNY Downstate.

ENCE/EXIT INTERVIEW PROCESS FOR LOAN RECIPIENTS
In accordance with federal regulations, all borrowers must have both an entrance interview and an exit interview for federal student loans. Downstate students will accomplish this at an interactive website, the address for which will be given after the student has received material to aid in the completion of the interview. If further help is needed, students should request an appointment with the Financial Aid Office staff.
SATISFACTORY ACADEMIC PROGRESS
Federal and state law and regulations require that all students receiving financial assistance, including all federal student-aid funds and New York State TAP funds, maintain satisfactory academic progress. In compliance with these regulations, policies have been adopted at Downstate.

The College of Medicine, as a graduate school not adhering to grade-point-average standards, monitors its students under its own requirements, which are more stringent than federal and state requirements. Those students who are deemed eligible to continue in the College of Medicine are considered eligible for aid.

Incremental Review: Annually, students’ records are reviewed to determine if their progress in the prior year is adequate to allow them to complete within the Maximum Time Frame. Each student must have completed 67% of all credits attempted.

If it is determined that a student has failed to meet the standards, he or she will be notified immediately that aid is denied beginning at once.

APPEAL OF FINANCIAL AID DENIAL
A student who has been denied aid due to a failure to meet Satisfactory Progress requirements may appeal the denial on the basis of circumstances beyond his or her control. The appeal must be in writing and must adhere to the following requirements:
1. The “Appeal for Exemption to Financial Aid Policy” form must be completed.
2. The student must write a letter that describes the reasons for the failure to comply and submit an academic plan to ensure future academic success.
3. The student must provide documentation supporting the reasons for failure to comply (e.g., a doctor’s statement regarding medical reasons).

The appeal must arrive at the Office of Financial Aid no later than three weeks before the close of classes for the term in which renewed aid is desired. The Director of Financial Aid or a designee will review the appeal and make a written decision given to the student within two weeks of receiving the appeal.

DISBURSEMENT OF AID
Any student aid that Downstate receives on a student’s behalf is applied first to his or her school charges (tuition, fees, housing). The Bursar’s Office then delivers the remainder of the aid to the student.

Other Forms of Financial Aid
Downstate cannot guarantee that it will meet 100% of any student’s need, since aid is subject to many limitations. An aid package may contain grants and work-study, depending on a student’s need. Downstate offers loans to all students up to the maximum amount of their eligibility.

Financial Aid packages vary from year to year. A student may receive a one-year scholarship with low loan amounts; in the next year, without a scholarship, loan amounts would be higher.

Most graduate students are eligible only for loans and for work-study (if the student requests work). More grants are available to undergraduates. Scholarships and grants are very limited and are awarded to those students with the greatest financial need.

All student aid mentioned in this section, available directly through Downstate’s Financial Aid Office, requires the submission of a FAFSA and an Institutional Application, plus any other documentation that the federal government or the school may require to complete information relating to the FAFSA.

LOANS
Federal Perkins Loans
Funding is available directly from Downstate’s program. Federal law allows a maximum of $8,000 for graduates. Actual offers are dictated by funds available at the school, and the maximums are only offered for exceptional cases. Interest is 0% during school and deferment, 5% when repayment begins.

Federal Work-Study (FWS)
This is need-based work. Eligible students who have been given an award in this program may work at on-campus jobs. Salary is provided through the FWS program, rather than through Downstate. FWS provides an opportunity for students to limit their borrowing.

SDS (Scholarships for Disadvantaged Students)
Grants vary but range between $1,000 and $8,000. Parental information may be required from all students regardless of dependency status.

Emergency Loans
These loans are available through the FSA Association, and only students who have applied for and been offered aid through Downstate’s Financial Aid Office may receive them. A student whose aid is not yet available for any reason may apply for the loan, which will be repaid by the Bursar when the pending aid becomes available. The Emergency Loan is not a service to the student, but a business arrangement made between the student and the FSA. The loan requires a fee to be paid. See the Student Handbook for details.
Academic Program

Medical students are expected to master eight domains of competence as a condition for graduation from SUNY Downstate Medical School. Each of the competencies encompasses broad educational objectives that together constitute a unified concept of the professionally competent medical school graduate.

SUNY Downstate’s domains of competence delineate the attitudes, knowledge and skills that students should possess upon graduation from this medical school. Each domain represents a distinct but interrelated component of an integrated model of physician competency. These competencies form the basis for graduation from Downstate, assuring that the physician is knowledgeable, technically skilled, socially conscious and professionally responsible. Upon graduation from SUNY Downstate, the student will have demonstrated the following:

1) Professionalism
The graduate demonstrates integrity and honesty in her/his role as a physician, respect and responsiveness to the needs of patients and society that supersedes self-interest, and high standards of moral and ethical behavior. Included in this is awareness of the ethical dimensions and broader social issues in the practice of medicine and health care policy.

2) A Knowledge of Basic Science that Forms the Basis of Clinical Medicine
The graduate demonstrates knowledge of the basis of disease and its natural history at the molecular, cellular, and systemic level, understanding the scientific rationale that guides therapeutic intervention. Inherent in this competency is an understanding of the scientific process and a commitment to the use of scientific knowledge in the clinical care of patients.

3) Effective Communication
The graduate conducts a thorough patient-centered interview, eliciting a medical history from patients of diverse backgrounds in major clinical venues, forming a therapeutic alliance that encourages patient education, counseling and shared decision-making. The graduate communicates clearly in writing and orally with members of the health care team in order to effectively teach and coordinate care.

4) Basic Clinical Skills
The graduate demonstrates skill in eliciting information from the medical history and physical examination in a compassionate and respectful manner. The graduate uses appropriate and cost-effective laboratory tests and technology, and synthesizes patient information to arrive at a reasoned diagnosis, therapeutic plan, and ongoing management.

5) An Understanding of Health Maintenance and Disease Prevention
The graduate demonstrates the ability to educate patients and their families to adopt health-promoting behavior, and to work within a health care team to optimize health. Moreover, the SUNY graduate will know those practices that maintain the health of the patient and those that address the health of a population.

6) An Awareness of Healthcare in the Context of Community and Society
The graduate understands the many non-biological factors that influence health, disease, disability, and access to care. Specifically, the SUNY graduate will be aware of those issues affecting health and the resources available to care for patients within an urban, culturally diverse community.

7) Information Management
The graduate must demonstrate competency in utilizing resources that support clinical decision-making, including an understanding of the principles of evidence-based medicine. This requires the ability to critically appraise the literature and to apply this knowledge to the care of the individual patient.

8) A Commitment to Life-Long Learning
The graduate recognizes and reflects upon personal limitations in knowledge and experience, and uses feedback to enhance her/his ability to fulfill the role of physician. There is evidence of a clear commitment to ongoing learning to maintain state-of-the-art patient care.
Curriculum

The current curriculum was implemented in 1998. During the first year, the focus is on the basic components of human biology and behavior, as well as on the essential aspects of the physician-patient relationship. Using this foundation, the second-year student begins the study of human disease, its diagnosis, prevention, and treatment, and is taught the techniques of physical diagnosis. The third year is devoted to clerkships (required introductory clinical courses) in each of the clinical disciplines, in which the student functions as a member of a health-care team under close faculty and resident supervision.

CIP Code

The College of Medicine is registered with the New York State Department of Medicine under CIP Code 51.1201. Enrollment in other than registered or otherwise approved programs may jeopardize a student’s eligibility for student-aid awards.

FIRST-YEAR CURRICULUM

The first-year curriculum uses a multidisciplinary systems-based approach to teach the normal structure and functions of the body. Each week includes one day of an early clinical experience course and four days of basic science. Material from the disciplines of biochemistry, cell biology, embryology, gross anatomy, histology, genetics and molecular biology, physiology, and neuroscience are learned in integrated blocks:

- Genes to Cells/ Skin and Connective Tissue
- Musculoskeletal System
- Blood/Lymphoid/Head and Neck
- Cardiovascular System
- Respiratory System
- Gastrointestinal System and Intermediary Metabolism
- Urinary System
- Endocrine and Reproductive Systems
- Neuroscience

Each block includes a combination of large- and small-group learning formats. These include case-based learning sessions, lectures, histology and gross anatomy laboratories, conferences, and other small-group discussion sessions. The nine blocks are organized into seven grading units consisting of one long block or two shorter blocks.

MEDI 1105
Musculoskeletal System

This block includes the structure, function, and development of the body wall and limbs, and serves as a vehicle for introducing basic concepts about muscles and the nervous and vascular systems. Basic concepts of embryogenesis and the nervous and vascular systems are introduced. Methods of instruction include lecture, case-based learning, and gross anatomy and histology laboratories. 5 credits.

MEDI 1106
Blood/Lymphoid / Head and Neck

The basic elements of blood and blood cell development are covered, along with the mechanisms involved in blood clotting and blood-gas exchange at both the structural and biochemical levels. Structure and function of the immune system are discussed with an emphasis on the cellular aspects of immunology. The laboratories include identification of blood-cell type, hematopoiesis, the histology of the immune system, and the anatomy of the head and neck. 3 credits.

MEDI 1107
Cardiovascular and Respiratory Systems

Cardiovascular System: The cardiovascular block presents an integrated view of the anatomy, histology, physiology, and cell biology of the cardiovascular system. This block emphasizes electrophysiology of the heart, biochemistry of cardiac muscle, hemodynamics of circulation, structure and function of smooth muscle, microcirculation, and the overall relation and control of the cardiovascular system. State-of-the-art information on genetherapeutic approaches to cardiovascular disease is presented.

Respiratory System: The respiratory block includes the normal structure and function of the airways and lungs. Topics also include the role of other structures that help regulate breathing and the exchange of oxygen and carbon dioxide both at the periphery and in the lungs. Methods of instruction include lecture, case-based learning, and gross anatomy and histology laboratories. 5.5 credits.
This year-long course focuses on the development of skills in basic clinical communication, knowledge of ethical principles guiding the doctor-patient relationship, knowledge of human behavior across the life cycle, and an understanding of statistical techniques used in medical research and evidence-based medicine. A combination of large-group sessions, small group discussion, and experience in clinical settings are used to acquire knowledge and skills and practice their application. 6 credits.

MEDI 2111  
Gastrointestinal System II  
This block provides an understanding of the biological basis of the common and important disorders of the oral cavity, gastrointestinal tract, liver, biliary tree, and pancreas. Diseases of the gastrointestinal tract are presented. The pathophysiology and treatment of these diseases are discussed in small-group sessions and presented in lecture along with the radiologic examination of the gastrointestinal tract and laboratory exercises covering enteric and parasitic organisms. 3 credits.

SECOND-YEAR CURRICULUM

MEDI 2201  
Infection, Immunity, and Inflammation  
The fundamental principles of immunology, microbiology, pathology and pharmacology that are necessary for the organ-system based blocks that follow are presented. Specific infectious diseases are covered based on their ability to illustrate important principles. Besides an introduction to infectious diseases, the block includes musculoskeletal and skin diseases. Epidemiological considerations, preventive measures, and issues concerning bioterrorism are discussed. Basic microbiological skills are taught in laboratories. 9 credits.

MEDI 2205  
Hematology and Neoplasia  
This block is an introduction to understanding the molecular basis of neoplasia in general, with emphasis on hematologic cancers. Specific topics include the hemostatic system (including the genetics and biochemistry), anemias, functional disorders of the white blood cells, blood platelets and blood coagulation, and the blood banking system. Instruction in the pathophysiology and treatment of these disorders is taught by lecture, case-based learning, and in laboratory sessions. 4 credits.

MEDI 2107  
Cardiovascular and Respiratory Systems II  
Cardiovascular System: This block begins with an elaboration of the basic structure and function of the autonomic nervous system and the cardiovascular system, with an introduction to primary disorders of these systems and their associated treatments. The pathophysiology, epidemiology, prevention, and treatment of cardiac disease are emphasized in case-based sessions and lectures. Cardiac lesions are examined in the laboratory and by radiologic and echocardiographic methods.

Respiratory System: Diseases of the respiratory system and basic respiratory therapeutics are introduced, and their effects on the mechanics and regulation of breathing and gas exchange are discussed. Environmental and occupational risk factors for pulmonary disease are presented in lecture and small group formats. Infectious and inflammatory diseases of the lung are studied in the laboratory. 5.5 credits.

MEDI 2112  
Endocrine, Reproductive and Urinary Systems  
The student develops an understanding of the interrelationship of the endocrine and renal systems. Representative disorders of the renal system are presented along with the role of the kidneys in controlling body fluid homeostasis and disorders that arise when homeostatic control is disturbed.

The pathophysiologic processes caused by over- and underproduction of hormones and appropriate pharmacologic interventions, as well as the contribution of the endocrine and renal systems to the causes of hypertension, are presented in lecture, case-based learning, and laboratory sessions. 4.5 credits.
MEDI 2114
Nervous System and Psychopathology
This course connects basic neuroscience to the diagnosis and management of neurological and psychiatric problems. The course is integrated with the teaching of the neurological and psychiatric examination in the Essentials of Clinical Medicine II course. The student learns to apply the knowledge of basic neuroscience to both clinical and scientific neurological and psychopathological problems through lecture, small group discussion, and patient presentations. 5.5 credits.

MEDI 2110
Essentials of Clinical Medicine II
The themes of the second year of the Essentials of Clinical Medicine sequence are disease prevention and health promotion; clinical communication skills with an emphasis on negotiating agendas, the sexual history, giving bad news and promoting change; physical diagnosis; evidence-based medicine; ethics; and the role of culture. Teaching modalities and learning venues include lectures, small group discussions, physical diagnosis laboratories, and preceptorships in offices and clinics. 5.5 credits.

THIRD AND FOURTH YEAR CURRICULUM
The third and fourth years consist of the required clerkships listed below, a four-week subinternship in Medicine or Pediatrics, four weeks of electives in radiology, critical care, emergency medicine or translational science, and 20 weeks of electives.

CLERKSHIPS
Due to space limitations, required clerkships are open to SUNY Downstate College of Medicine students only.

MEDI 3000
Transition to Clerkships
This mini-course provides an overview of skills, knowledge and attitudes required for clinical clerkships. Through lecture and small group exercises, students learn about the continuum of care of patients from hospital admission through discharge and follow-up, the medical student’s role in patient care, the learning habits and attitudes required to succeed in clinical settings, and methods of assessment and evaluation used in the clinical years. Prerequisites: Satisfactory completion of the first and second years of medical school. The “Transition to Clerkships” course is the required introduction to the third-year clerkship. 1 credit.

MEDI 3101
Medicine Clerkship
Students are introduced to clinical medicine; develop skills and knowledge needed to evaluate patients; learn the principles underlying therapy; and develop an appreciation of their role as a member of a health-care team, a sense of responsibility for the well-being of their patients, and an understanding of the effort and dedication required of a caregiver. Maximum number of students 40. Prerequisites: satisfactory completion of the first and second years of medical school; passing Step 1 USMLE. 8 weeks—4 weeks at Kings County Hospital Center or University Hospital and 4 weeks at an affiliate hospital; 8 credits.

NERU 3201
Neurology Clerkship
This clerkship provides experience in the physical examination, diagnosis, and management of patients with neurological diseases. Students are assigned patients for whom they assume responsibility under the supervision of resident and attending neurologists. Students participate in weekly clinical conferences and outpatient clinics, and are introduced to the use of neurological tests, such as EEG, EMG, CT scans, MRI scanning, cerebral angiography, and myelography. Maximum number of students 23; prerequisites: satisfactory completion of first and second years of medical school, passing Step 1 USMLE; 4 weeks; 4 credits.

OBGY 3301
Women’s Health Clerkship
A wide variety of clinical experiences provide learning opportunities in the area of women’s health from menarche to menopause and beyond. Students gain experience in procedures such as collecting and interpreting a cervical cytology, participating in delivery and postpartum care, and counseling patients on health issues such as contraception, pregnancy, and breastfeeding. Both outpatient and inpatient experiences are used. Maximum number of students 29; prerequisites: satisfactory completion of first and second years of medical school; passing Step 1 USMLE; 6 weeks; 6 credits.

Peds 3401
Pediatrics Clerkship
The pediatric clerkship is designed to provide students with the basic knowledge and skills necessary to evaluate and manage patients from birth through adolescence. Students are expected to acquire an understanding of history taking skills (including interviewing parents), basic procedures, and physical diagnosis techniques as they apply to pediatric patients of various ages. Students spend four weeks in an in-patient setting and two weeks in a combined nursery/ambulatory setting. Maximum number of students 26; prerequisites: satisfactory completion of first and second years of medical school; passing Step 1 USMLE; 6 weeks; 6 credits.

PSYH 3501
Psychiatry Clerkship
Students work on in-patient psychiatric units in evaluation, treatment, and management of patients under supervision. In-patient work is supplemented with selected outpatient clinical experiences and a program of formal didactic instruction. Maximum number of students 25; prerequisites: satisfactory completion of first and second years of medical school, passing Step 1 USMLE; 6 weeks; 6 credits.

SURG 3601
Surgery Clerkship
The student follows patients on a variety of surgical services throughout their illnesses and takes an active part in the therapy, including the performance of minor technical procedures, assisting at operations, and following results. Emphasis is placed on the clinical, rather than the technical, aspect of surgery. Instructional venues include rounds, teaching conferences, and an audiovisual laboratory in addition to clinical teaching at the bedside. Maximum number of students 40; prerequisites: satisfactory completion of first and second years of medical school, passing Step 1 USMLE; 8 weeks; 8 credits.
PRIM 3801

Students spend four consecutive weeks in a functioning clinical ambulatory care setting in medicine, medicine/pediatrics, pediatrics, or family medicine. Students expand existing skills in medical interviewing, and physical diagnosis while developing additional skills in differential diagnosis, health maintenance, patient counseling, and follow-up. In addition to direct patient-care responsibility, small-group case discussions and topic reviews of particular importance to primary care form the core of the teaching. Students present an in-depth review of one primary-care topic during the course, and in addition may elect to do a special project in ambulatory or community health to receive an Honors grade. Students spend one afternoon a week at the SUNY Downstate campus taking Essentials of Clinical Medicine III, which reemphasizes and extends skills and knowledge acquired in the first two years of the ECM sequence. Maximum number of students: 25-27. Prerequisites: satisfactory completion of the first and second years of medical school; passing Step 1 USMLE. 2 weeks; 2 credits.

ANES 3901

Anesthesiology Clerkship

The anesthetized patient provides an excellent model for students to learn how to recognize and treat individuals whose respiratory, cardiovascular, and central nervous system have been electively depressed. Students are able to apply basic-science principles to understand the pathophysiology of the patient with CNS, cardiovascular, and respiratory depression. Students become knowledgeable about the risks and hazards of anesthesia and the problems unique to the specialty. Students are expected to take an active part in the perioperative care of patients presenting for surgery and anesthesia. In addition to participating in clinical care, students attend rounds, conferences, and lectures. Maximum number of students: 10. Prerequisites: satisfactory completion of the first and second years of medical school; passing Step 1 USMLE. 4 weeks; 4 credits.

EMED 3701

Emergency Medicine Clerkship

The clerkship is designed to provide the student with an introduction to the appropriate diagnosis and management of patients requiring emergency and/or critical care. Students are expected to perform a thorough history and physical exam, monitor and assess vital signs, and generate a differential diagnosis. Students are exposed to major trauma and medical resuscitations, early interventions that prevent mortality and morbidity, and electrocardiogram and radiographic interpretations. The student is also introduced to the performance of basic emergency procedures under supervision such as phlebotomy, IV insertion, arterial blood gas, nasogastric tube insertion, suturing, and splinting. In addition, emergency medicine involves attention to the establishment of a relationship with the patient and the family, as they cope with the emotional trauma of emergencies, critical illness, dying, and death. In addition to clinical experience, a lecture series is provided. Maximum number of students: 15. Prerequisites: satisfactory completion of the first and second years of medical school; passing Step 1 USMLE. 2 weeks; 2 credits.

PRIM 4003

Primary Care II Clerkship—Geriatrics/Palliative Care

The curriculum ensures a foundation in attitudes, knowledge and skills required for competent and compassionate care of older patients. It is focused on acquiring proficiencies in the attitudes, knowledge, and skills needed for elder care. Knowledge and experience are gained of the common geriatric syndromes including altered mental status, iatrogenesis, mobility including falls, sensory deficits, failure to thrive, sleep disorders, pressure ulcers, incontinence, and nonspecific presentation of disease. Risk-reduction and preventive care are emphasized. The Clerkship includes a lecture series on Palliative Care with emphasis on the EPEC, a site visit to Calvary Hospital, and direct clinical experiences at the individual sites. A palliative care website is available for student participation and will be an additional requirement for completion of this segment. Maximum number of students: 20. Prerequisites: satisfactory completion of the first and second years of medical school; Primary Care I; passing Step 1 USMLE. 4 weeks; 4 credits.

MEDI 5000

Transition to Residency

This brief fourth-year course is focused on preparing students to take a different and much more responsible role in the care of patients and in self-directed learning. Topics include professional behavior (legal issues and responsibility to patients), strategies for learning and teaching during residency, and changes in lifestyle (e.g., families and parenthood, debt management). 1 credit
MD/PhD Program
The College of Medicine and the School of Graduate Studies jointly sponsor a program leading to a combined MD/PhD degree. This program combines a medical education with an intensive research experience, and is designed for students who are interested in pursuing a career in academic medicine. Students are supported with a stipend and a tuition scholarship throughout the duration of the program.

MD/MPH Program
Medical students at SUNY Downstate can earn a master’s degree from the School of Public Health at the same time as earning their MD degree. The MPH program focuses on the health of immigrant and urban populations. Students may choose to complete the MPH degree in one of five core areas:

- Biostatistics
- Community Health Sciences
- Environmental and Occupational Health Sciences
- Epidemiology
- Health Policy and Management

MD/MPH students are given preference for selection in the overseas elective for medical students: Healthcare in Developing Countries.

Research Opportunities
Medical students are encouraged to participate in basic and/or clinical research starting as early as their first year. Significant basic science and clinical faculty support is provided to those students interested in specific research training and experience in order to connect/match them to the appropriate research mentor.

The range of opportunities for students includes:

1) summer research projects, usually after the first year of medical school;
2) a “year-out” program to perform a full year of research; and
3) the MD/PhD program

Students conducting summer research projects are encouraged to apply for national fellowships or for campus fellowships funded by the Alumni Association and the College of Medicine. Top student research is acknowledged/rewarded at Downstate through annual competitive awards sponsored by the Robert F. Furchgott Society and the Alumni Association. Students conducting significant research through the summer or “year out” programs are eligible for special recognition at graduation, when the dean of medicine grants Distinction in Research and Commendation in Investigative Scholarship awards.

Annual Research Day is a significant event on campus. Student research is acknowledged in a global poster session.

Alpha Omega Alpha (AOA)
(The following is excerpted from the 1992-93 AOA Chapter Booklet. Additional information appears in the Student Organization section of the Student Handbook.)

Alpha Omega Alpha (AOA) is the national honor society for colleges of medicine in the United States. It was founded in 1902 by William Webster Root and five other medical students at the College of Physicians and Surgeons in Chicago. Chapters elect undergraduate members from students in their last two years of medical school. Scholastic excellence is a key criterion but not the only one for election; capacity for leadership, compassion, and fairness in dealing with one’s colleagues are also to be considered.

Members may be elected to AOA as students, residents, or faculty members. The local chapter elects student members from those in their last two years of medical school. A maximum of one-sixth of the class total may be selected from each medical school class, of which not more than 25 percent may be selected in their junior year. Transfer students may also be considered for election to AOA in their senior year, after they have completed one academic year at Downstate.

Academic Policies
Current academic policies are described in the Student Handbook, which is distributed annually to all matriculated students.

Student Conduct
Detailed policies, student conduct rules, and disciplinary procedures appear in the Student Handbook.
Clinical Training Facilities

Medical students receive their clinical training at University Hospital of Brooklyn; Kings County Hospital Center (located directly across Clarkson Avenue); and at affiliated institutions and sites throughout the metropolitan area. Current information is posted on the institutional website (www.downstate.edu).

UNIVERSITY HOSPITAL OF BROOKLYN

University Hospital of Brooklyn is the teaching hospital of SUNY Downstate Medical Center. Fully accredited in all medical subspecialties, it provides primary and advanced medical care to more than 300,000 patients annually. University Hospital of Brooklyn (UHB) comprises two full-service hospitals:

UHB at Central Brooklyn is a 376-bed facility with 8 intensive care and step-down units, 12 operating rooms, an adult and pediatric ER, a diagnostic and ambulatory surgery facility, a transplant center, and 75 outpatient clinics. Its Children’s Hospital offers specialized pediatric services. UHB is a designated Regional Perinatal Center.

UHB at Long Island College Hospital in Downtown Brooklyn is a 366-bed facility. Its specialty centers include the Othmer Cancer Center, a Comprehensive Stroke Center, and pediatric and obstetric services. UHB also has three community-based centers in East New York, Bedford-Stuyvesant, and Midwood; a Dialysis Center; and an Urgent-Care Center and Ambulatory Surgery Center in Bay Ridge.

University Hospital’s integration with the College of Medicine has made it possible to assemble a full-time staff of clinicians, basic scientists, and other health-care professionals who have strong academic backgrounds in their fields of specialization. The staff is enriched by a part-time faculty of voluntary attending physicians from the community who devote time to Downstate. Faculty members closely supervise the care of patients while instructing medical students and other future health professionals.

KINGS COUNTY HOSPITAL CENTER

One of the largest acute-care hospitals in the country and the largest municipal hospital in New York City, with 43 acres and 23 buildings, Kings County Hospital Center offers clinical opportunities of every description. It is operated by the Health and Hospitals Corporation of the City of New York. Kings County recently completed a state-of-the-art 338-bed inpatient tower as part of its modernization project. Its facilities include one of the country’s busiest emergency rooms, a nationally recognized Level I trauma center, and more than one hundred ambulatory care services. Kings County averages 23,000 admissions, 140,000 emergency room visits, and more than 543,000 outpatient visits annually.

CLINICAL AFFILIATES

Complementing the clinical experiences available at University Hospital of Brooklyn and Kings County Hospital are a wide variety of hospitals and clinical settings throughout the metropolitan area. The list of clinical sites used in the teaching program may vary from year to year and is updated annually in the Course Selection Book and other university information sources.

The major clinical sites currently used for medical student clerkships are:

Brookdale University Hospital and Medical Center
530-bed voluntary hospital. Brookdale is designated a Level One Trauma Center.

Coney Island Hospital
387-bed New York City Health and Hospitals Corporation hospital.

Long Island Jewish Medical Center
888-bed voluntary hospital, part of North Shore Long Island Jewish Health System.

Lutheran Medical Center
468-bed voluntary hospital. Lutheran is designated a Level One Trauma Center.

North Shore University Hospital
804-bed voluntary hospital, part of the Long Island Jewish Health System.

Staten Island University Hospital
714-bed voluntary hospital.

Department of Veterans Affairs, New York Harbor Healthcare System, Brooklyn Campus
117-bed tertiary-care hospital with designated primary-care program and ambulatory-care center.
Support Services for Students

ACADEMIC ADVISEMENT
During the first two years of medical school, students are encouraged to seek academic assistance from their course directors or faculty instructors regarding how to improve their academic performance in a particular course. Students in academic difficulty should also seek early assistance from the Office of Academic Development and the director of student counseling (for anxiety reduction and relaxation techniques).

Students who have questions regarding academic policies or their academic status, or seek information regarding academic support services, may seek assistance from the deans in the Office of Student Affairs.

During the clinical years, students in academic difficulty in a particular course are encouraged to seek assistance from their clerkship course director or faculty preceptors/attendings, the Office of Academic Development, and the director of student counseling. Students who have questions regarding academic policies or their academic status in the clinical years, or who seek information regarding academic support services, may seek assistance from their clinical assistant dean or from the deans in the Office of Student Affairs.

CLINICAL ASSISTANT DEANS
In January of the third year of medical school, students are assigned a clinical assistant dean. The clinical assistant dean provides advisement on the senior-year program of study and coordinates the compilation of the Medical Student Performance Evaluation (MSPE, also known as the Dean’s Letter) used in the residency application process.

OFFICE OF ACADEMIC DEVELOPMENT
The mission of the Office of Academic Development is to enhance students’ academic performances. During each year of study and training, medical students are confronted by a range of new challenges. For example, incoming students must rapidly adapt to exacting time constraints, a challenging level of detail in the knowledge required for passing, and to the vast volume of information presented during each course.

During their first year, even outstanding students may find it daunting and difficult to adapt to the new study and learning environment. During their second year, students are required to make additional parallel adjustments and begin to think clinically in order to effectively study the new material. Then, during their third year, medical students must adjust to the unique learning demands of clinically applying their knowledge while working with a diverse patient population.

To make medical studies less stressful and more enjoyable, the Office of Academic Development offers a variety of services. These include group and individual tutorials; review sessions and workshops; and support for licensing exam preparation. The director and assistant director also provide individual academic advising and counseling for all students in the following areas:

• Study strategies
• Test taking
• Time management
• Resource management
• Memory and retention

For current contact information, consult the Student Handbook.

OFFICE OF MINORITY AFFAIRS
The Office of Minority Affairs directs several programs specifically targeted to furnish needed information and support for students who are underrepresented in medicine—African Americans, Native Americans, Mexican Americans, and Hispanics. One such program, Operation Success, is a six-week summer program designed to provide a sampling of course content scheduled for the first academic semester. A skills-development component helps to improve basic study and time-management skills. The program also offers students the chance to meet and develop relationships with faculty and classmates, helping them feel comfortable in the new environment.

The office also administers several programs that encourage and assist students to enter medicine, allied health, or basic science. An undergraduate Summer Research Fellowship is available in either the basic sciences or clinical specialties. The PATH program works with students from several local colleges to prepare them to enter the healthcare professions.

The Office of Minority Affairs provides support to two student organizations: the Daniel Hale Williams Society, Downstate’s chapter of the Student National Medical Association (SNMA), is named for an African American physician who was the first to perform surgery on the heart and have the patient survive. Its goals are educational, social, and service-oriented. SALUD, Downstate’s chapter of the National Boricua Latino Health Organization (NBLHO), promotes health awareness and provides information relating to illnesses that primarily affect the Latino community.
RESIDENCY INFORMATION AND ADVISEMENT
Information about residency advise-ment resources is available on the institutional website. These resources are supplemented through class meetings and programs throughout the four years.

Careers in Medicine is an on-line program: www.aamc.org/careersinmedicine
It is designed to assist medical students in understanding options for choosing a specialty and applying to residency programs.

A shadowing program is available through the College of Medicine Alumni Association; career exposure opportunities and noncredit electives are also available. Specialty oriented student organizations provide additional information and exposure to the specialties.

The Alpha Omega Alpha (AOA) Medical Honor Society organizes a Subspecialty Forum in the spring. Faculty representatives from the academic departments come and talk to first- and second-year students about their field of medicine. During Transition to Clerkships, faculty panelists describe their careers.

A list of Specialty Advisors is distributed to students annually. This is a list of individuals designated by each department who are prepared to offer specialty counseling and advisement to students.

Residency Information Resources
The Student Affairs website has a section titled “Residency Information and Guidance” that has helpful resources for students.

STUDENT COUNSELING
The Student Counseling Service is part of the Student Health Service and provides counseling and psychological services to matriculated students in the Colleges of Medicine, Nursing, Health Related Professions, School of Graduate Studies and School of Public Health. All information revealed to the counselor is strictly confidential and cannot be shared with another person without the student’s consent. It is staffed by a licensed clinical psychologist who has extensive academic and professional experience in the field of academic counseling.

The Student Counseling Service has been established to help students deal with academically related stress as well as with any other personal problem that can interfere with their performance in school. These problems can include anxiety and fear, depression, low self-esteem, interpersonal difficulties, family problems, and habit-control problems (e.g., overeating, alcoholism, and drug abuse). Additional information regarding programs and services is detailed in the Student Handbook.

STUDENT HEALTH
The Student Health Service provides primary care for acute conditions, illnesses, and injuries to the more than 1,700 full-time and part-time matriculated students at SUNY Downstate. It also provides routine health clearances, immunizations, and tuberculin testing when needed. Services are not available to students who have not paid the Student Health fee, students on leave of absence, or families of matriculated students. Student Health includes, at no extra charge, a student counseling service for all matriculated students.

All students must submit a completed health form that includes, among other things, documentation of a tuberculin test (or chest x-ray if tuberculin is positive) and immunity to measles, mumps, rubella, varicella, and hepatitis B. Students not complying with this requirement will not be permitted to register for classes.

Purpose and Functions
The Student Health Service makes available to matriculated students preventive, therapeutic, and consultative medical care. The coverage provided by Student Health does not include hospitalization, laboratory fees, radiology fees, psychiatric care (other than initial evaluation and counseling by an on-campus psychologist), dental care, or consultation with physicians other than Downstate physicians.

Students in the School of Graduate Studies who are covered by the SUNY Graduate Student Employee Health plan use Student Health for primary care and referral to network physicians.

SUNY Downstate and its affiliated hospitals have protocols for exposure to blood and body fluids. This is detailed in the Student Health information pamphlet and in the Student Handbook.

Additional information regarding programs, hours, services, and policies is available in a brochure published by the Student Health Service and also in the Student Handbook as well as on the institutional website (www.downstate.edu).

Student Health Advisory Committee
The Student Health Advisory Committee includes members of the faculty, the director of the Student Counseling Service, the director of the Student Health Service, administrators, and students. The role of the Committee includes making recommendations regarding health services, counseling, health insurance, utilization of the yearly student health fee, and any other student health issues. The committee serves as an advisory body. Students with questions or suggestions are encouraged to speak to the director of the Student Health Service or the Office of Student Affairs.

Student Health Insurance
Student health insurance is mandatory for all students. Information about the health-insurance plan currently available may be obtained from the Office of Student Affairs.
**ALUMNI ASSOCIATION—COLLEGE OF MEDICINE**

Every medical student and graduate of the College of Medicine is a member of the Alumni Association. Annual dues finance alumni office costs and alumni publications and provide for record maintenance, archives, and services to alumni and students.

The charitable mission of the Alumni Association is accomplished through the Alumni Fund and administered by the Board of Trustees. Contributions to the Alumni Fund support a variety of programs for medical students, including scholarships, research fellowships and scholarly pursuits, travel stipends for electives abroad, the White Coat Ceremony, and many other student activities.

**MENTORING PROGRAM**

The Mentoring Program is sponsored jointly by the Alumni Association and the Dean’s Office. Its purpose is to provide personal attention and advisement to first-year students and to create an environment that eases their adjustment to medical school. First-year students are matched to clinical faculty on the basis of their specialty interests, and to second-year student co-mentors. Mentors strive to establish supportive relationships with their students by engaging them in social, clinical, and research activities that satisfy their needs and offer a perspective on medicine as a career.

**PARENTS ASSOCIATION**

**Purpose**

- To introduce parents to the College of Medicine and help them become acquainted with it.
- To acquaint parents with the College's academic program through guest speakers from the College (faculty and administration) and to learn about various medical specialties.
- To assist parents in learning how to cope with the emotional needs of medical students.

**History**

The parents of the students at the Long Island College of Medicine began working as a group in 1943. They assisted in a fundraising campaign to expand the College’s physical plant and to help meet its annual deficit. In 1947, the group was formally organized as the Parents’ Society of the Long Island College of Medicine by adopting a constitution and bylaws. The Parents Association is committed to having a “better understanding among parents, professional staff, students, the school, and the community.”

**Membership**

Meetings are held on the third Thursday of each month. These membership meetings provide an opportunity for parents to meet each other and share students’ common concerns and problems.
Graduate Study

Founded in 1966, the School of Graduate Studies is one of five colleges that make up the State University of New York Downstate Medical Center, and is accredited by the Middle States Association of Colleges and Commission on Higher Education. The School of Graduate Studies offers three PhD degree-granting programs: Molecular and Cellular Biology, Neural and Behavioral Science, and a joint PhD program in Biomedical Engineering in collaboration with the Polytechnic Institute of NYU. Students are reviewed by program-specific admissions committees, which rank students for the admissions process. Students are admitted into one of the three PhD programs, but they are permitted to change their affiliation up until the end of their first year (special circumstances may necessitate a program change at a later time).

The interdepartmental organization of Downstate's graduate programs reflects the interdisciplinary nature of modern biomedical research. Neural and Behavioral Science research ranges from molecular and cellular neurobiology to systems and behavioral neuroscience and computational neuroscience. Downstate's neuroscientists study single cells, in vitro brain and nerve preparations, intact animal models, and human subjects. Specific areas of research strength include the molecular mechanisms of learning and memory; the neuronal circuits and synchronous brain activity patterns underlying spatial navigation; the cellular, synaptic, network, and molecular mechanisms of seizure activity and epilepsy. Alzheimer's disease, brain injury, and stroke; the cellular and molecular basis of pain and addiction, the neurodevelopmental consequences of drug exposure, and brain activity biomarkers for alcoholism; imaging of brain activity; gender differences in neurotransmitter receptors and neuronal circuit properties; and neuroimmunology.

The breadth of Molecular and Cellular Biology is even greater. Strengths include genetic regulation of the development of the cardiovascular system; lipid metabolism and its role in atherosclerosis; the genetic and molecular basis for diseases such as skin cancer, pancreatic cancer, and myeloma; the regulation of transcription and translation in eukaryotic systems; the roles of RNA and proteins regulating RNA in various cells, including tumor cells and neurons; and the fundamental control of the cell cycle. There is substantial research on immunology that focuses on cells important for host defense against infections and tumors, evolution, and the generation of antibody diversity; regulation of B-cell differentiation related to immunodeficiency and cancer using a transgenic mouse model, and a novel tissue culture system. In fact, examples of research areas that frankly cross the boundaries of the programs include our very active opioid research program in which investigators study dependence, tolerance, and sex-steroid regulation of opioid pathways and of pain, and studies of anxiety that is induced during estrous-cycle progesterone withdrawal.

The Biomedical Engineering Program captures many of the most directly clinically relevant research, given its emphasis on applied research. This includes cutting-edge research projects aimed to elucidate the cellular and molecular mechanisms of stroke and epilepsy, neuroengineering methods and neurorobotics to control sensory and motor neuroprosthetic devices, and novel optical-tomography imaging systems that use light at near-infrared wavelengths to image pathophysiological tissue specimens of brain and breast.

A fourth option, available only as an MD/PhD option, is a joint program focused on nanomedicine with the College of Nanoscale Science and Engineering, a division of the University at Albany. In this program, students perform their MD studies at Downstate and their PhD studies at the
College of Nanoscale Science and Engineering. As the development of nanotechnology for diagnostic and therapeutic options, this degree option is intended to train physicians who will be the first to deploy a broad range of technologies in the clinics. The PhD in Nanoscale Science or Nanoscale Engineering will be broadly useful as the variety of early stage applications include cancer diagnostics and treatment, artificial cellular environments to support tissue repair and stem cell applications, tools for imaging and detection of specific cell types, and specialized materials for implants useful in orthopedics and neuroscience.

The interdepartmental structure of Downstate’s graduate programs fosters research collaborations and consolidates educational and scientific resources. An atmosphere conducive to scholarship and research is fostered, focusing on understanding the basic biological processes that underlie human health and disease. One of the chief objectives of the School of Graduate Studies is to educate those students who will become teachers and investigators in the biomedical sciences. Our campus and system-wide resources in technology development and entrepreneurship are leveraged for interested students. Students are introduced to biomedical scientists in non-academic careers, e.g., those working in biotech start-up companies in Downstate’s Advanced Biotechnology Park.

**MD/PhD PROGRAM**

The MD/PhD Program, which leads to the conferral of both MD and PhD degrees, is designed for students who intend to enter a career of research and teaching in academic medicine. In general, MD/PhD students are supported with both a stipend and a tuition scholarship throughout the medical and graduate school years.

Graduates of this program differ from most basic scientists in having had the extensive medical training required to investigate problems of disease. They also differ from most clinicians in having the detailed background, fundamental knowledge, and intensive research experience required for applying biomedical sciences techniques to clinical investigation.

The general aim of the program is to provide education in pre-clinical and clinical aspects of medicine equivalent to that obtained by regular medical students, along with intensive research experience in the basic medical sciences equivalent to that obtained by graduate students. Thus, students are expected to complete all requirements for an MD degree and a PhD degree, including a doctoral thesis. The entire program takes at least six years but usually more.

During the program’s first two years, students are enrolled in the standard curriculum of the College of Medicine. They are expected to work in research laboratories at the medical center during the summer months following completion of first- and second-year classes in the College of Medicine. The final choice of sponsoring graduate program may be deferred until the end of the second year. The supervision of a student’s research program is the responsibility of the sponsoring PhD program.

After completing the first two basic science years in the College of Medicine, students pursue full-time graduate work. Following their thesis defense, they return to the third year of the College of Medicine. Credit for courses taken in the College of Medicine are transferable up to a maximum of 24 credits toward the PhD degree.

**POSTDOCTORAL FELLOWS**

All basic science and clinical departments may sponsor postdoctoral fellows who are involved in basic science or clinical investigation. In general, several years of postdoctoral experience are required for those intending to pursue an academic career. The fellowship period provides an opportunity to obtain the breadth of experience required for a successful career in research and teaching.

More usually, postdoctoral fellows are sponsored by individual faculty members who agree to provide support and the requisite facilities. There are no formal regulations governing acceptance, duration of study, or allocation of support from Downstate’s resources, although general guidance may be obtained from the Office of the Dean of the School of Graduate Studies. Fellows are notified of all Downstate events and are invited to participate in the three graduate programs’ biweekly seminar series, special symposia, meetings, lectures, and conferences.
Admissions

Current admissions information and policies appear on the institutional website: www.downstate.edu.

Applicants are selected on the basis of their qualifications, without regard to sex, age, race, creed, national origin, or handicap. The School of Graduate Studies strongly welcomes and encourages applicants from underrepresented minority groups. Decisions regarding admission are based on a number of factors including, but not limited to, research experience, academic records, results of standardized tests, letters of recommendation, and a personal interview. Qualities such as interest, intellectual curiosity, perceptivity, and ability to reason are strongly considered in addition to the academic record.

The School of Graduate Studies, as a unit of the State University of New York, gives preference for admission to residents of New York State. However, applications from out-of-state residents are very much encouraged. The school is also authorized under federal law to enroll non-immigrant foreign students with appropriate visas. Admission to the School of Graduate Studies is limited to students seeking the degree of PhD or MD/PhD for research in basic biological sciences and biomedical sciences.

Candidates are considered by a school-wide admissions committee and admitted mostly in September, but occasionally in January. Candidates for a doctoral degree are only admitted on a full-time residence basis. Members of the graduate faculty sponsor students in their own fields of expertise, and application to the School of Graduate Studies implies willingness on the part of the candidate to work on subject matter that is relevant to ongoing faculty research at Downstate.

**REQUIREMENTS FOR ADMISSION**

**Graduate Students**

Applicants should submit the following documents to the: Office of the School of Graduate Studies

Box 41

SUNY Downstate Medical Center,

450 Clarkson Avenue

Brooklyn, NY 11203-2098

1. Completed application for admission from the Graduate School website: www.downstate.edu/grad).

2. Official transcripts of all undergraduate and graduate courses. Applicants are expected to have a bachelor’s degree from an accredited institution.

3. Letters of recommendation from two or more persons familiar with the applicant’s academic background and potential for research.

4. Results of the Graduate Record Examinations. Applicants to the MD/PhD Program may instead submit results of the Medical College Admission Test. Graduates of U.S. medical schools may submit results of the United States Medical Licensing Examination.

The completed application is reviewed by a school-wide admissions committee of multidisciplinary faculty. Before acceptance, an applicant is invited for a personal or telephone interview. Students are expected to specify a particular graduate program at the time of application, but may change their mind up until the end of their first year of study at the School of Graduate Studies—after they have completed at least one laboratory rotation. There is rolling admission; however, the absolute deadline for September matriculation is February 1. Stipends as well as tuition scholarships are available to graduate students.

**MD/PhD Program**

Students in this program work toward a combined MD/PhD degree, and they are alternately enrolled as students in either the College of Medicine or in the School of Graduate Studies. Applicants to this program must first apply for admission to the College of Medicine, and they are then considered for the combined MD/PhD program as part of the admissions procedure. Students who are already enrolled in the College of Medicine may apply for admission to the MD/PhD program at any time during their first two years of study. In evaluating applicants for the program, considerable emphasis is placed on prior research experience, such as that gained during summers or through appropriate electives, and on demonstrated potential for a research career. Applications should be submitted as early as possible during the preceding academic year, no later than the deadline date of December 15.

**Nonmatriculated Graduate Students**

A graduate student enrolled at another institution may be admitted to take a course given by a particular program if acceptance is recommended by the program director and approved by the dean; the specific courses must be approved by the home institution. Postdoctoral fellows and research assistants at Downstate may also register as nonmatriculated students to take courses offered by the School of Graduate Studies upon recommendation by their faculty supervisor and approval by the dean. Credits earned as a nonmatriculated student are limited to 12.

**Transfer Credit**

Transfer credit toward the doctorate will be granted for graduate level work at accredited institutions, in accordance with the regulations of the Commissioner of Education, Section 52.2(e)(3). Up to 24 credits may be transferred. Any advanced credit must be approved by the dean and must be in keeping with the candidate’s academic objectives. Program requirements, however, may only be waived by the executive committee of the program.
Current tuition and fees and financial aid information is listed on the institutional website.

TUITION AND FEES
Currently, all matriculating graduate students receive a full tuition scholarship. Tuition for full-time graduate students is $9,370 per year for New York State residents and $16,680 per year for nonresidents. Students carrying fewer than 12 credits in a semester are charged tuition at the rate of $390 per credit (resident) or $695 per credit (nonresident). Student fees, on the other hand, are the responsibility of the student: An annual college fee of $25 is required for all full-time students, as are a $100 Student Activities Fee and a $56.50 per semester Student Health Fee. All financial obligations must be cleared prior to completion of each academic year. Students who have not cleared their account will not be allowed to register, receive a transcript or letter of recommendation, have academic records certified, be granted a leave of absence, or have a degree conferred.

REFUNDS
If a student leaves the school for any reason—cancellation of registration, withdrawal, transfer, or dismissal—tuition is refundable according to the schedule published in the Student Handbook.

STIMATE OF EXPENSES
Expenses vary depending on the general lifestyle of the student, on-campus and off-campus living arrangements, and the selection of books, equipment, and course materials. However, upper limits for standard educational expense budgets are established each year in order to distribute equitably the limited amount of federal, state, and institutional aid. Married students receive consideration based on a single-student budget, because financial aid can be used to finance only the student’s direct educational cost. The following approximations were compiled to assist graduate students in developing expense budgets for 2012-2013:

**SINGLE STUDENT 2012-2013**

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition</td>
<td></td>
</tr>
<tr>
<td>Resident</td>
<td>$9,370</td>
</tr>
<tr>
<td>Non-Resident</td>
<td>$16,680</td>
</tr>
<tr>
<td>Fees</td>
<td>$541</td>
</tr>
<tr>
<td>Room (average cost)</td>
<td>$13,700</td>
</tr>
<tr>
<td>Board</td>
<td>$6,000</td>
</tr>
<tr>
<td>Personal Expenses</td>
<td>$4,000</td>
</tr>
<tr>
<td>Transportation</td>
<td>$900</td>
</tr>
<tr>
<td>Books</td>
<td>$300</td>
</tr>
<tr>
<td><strong>Total for twelve months:</strong></td>
<td></td>
</tr>
<tr>
<td>Resident</td>
<td>$34,811</td>
</tr>
<tr>
<td>Non-Resident</td>
<td>$42,121</td>
</tr>
</tbody>
</table>

FINANCIAL AID
Full-time graduate students are eligible for a full tuition scholarship as well as other financial aid in the form of fellowships and teaching assistantships. Currently, these are provided from school-wide resources in the first and second year and from research grants awarded to individual thesis advisors after the first two years. In addition, graduate students may be supported by training grants, or by individual pre-doctoral fellowships. The minimum teaching assistantship/stipend for the 2011-2012 academic year was $25,385 annually for entering PhD students. After the first two years, students may be provided supplementary funds, if available from research grants or other institutional resources, up to a maximum total stipend of $35,000 annually. (Check the website for the most up-to-date information.)

Downstate has consistently supported the national goal of making educational opportunity available to all who can benefit from it, whether or not they are able to pay the cost themselves. No student who believes that he or she qualifies for admission should be deterred from applying because of inadequate financial resources.
Enrollment in other than registered or otherwise approved programs may jeopardize a student’s eligibility for student-aid awards. Courses are numbered as follows: 0100 – 0900

Core courses in School of Graduate Studies

**GRSC 0100 – GRSC 0900**

Courses offered by individual graduate programs

**GBME 0100 – GBME 0900,**  
**GMCB 0100 – GMCB 0900,**  
**GNBS 0100 – 0900,** etc.

### MOLECULAR AND CELLULAR BIOLOGY: PROGRAM OF STUDY

<table>
<thead>
<tr>
<th>Fundamental Courses</th>
<th>Credits</th>
<th>Program Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular and Cellular Biology 1</td>
<td>6</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Molecular and Cellular Biology 2</td>
<td>6</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Graduate Biochemistry</td>
<td></td>
<td>Mandatory</td>
</tr>
<tr>
<td>Responsible Conduct in Research</td>
<td></td>
<td>Mandatory</td>
</tr>
</tbody>
</table>

**Major Courses (choice of 2 required)**

| Developmental Biology                            | 3       | Major Elective        |
| Virology                                         | 3       | Major Elective        |
| Molecular Genetics                               | 3       | Major Elective        |
| Advanced Molecular Immunology                    | 3       | Major Elective        |
| Genomics and Proteomics                          | 3       | Major Elective        |

**Electives**

| Human Immunology                                 | 2       | Elective              |

**Seminars, Journal Clubs, and Other Requirements**

| Seminar Series in Molecular and Cellular Biology | 1       | Mandatory, all years |
| Research Topics in Biomedical Science           | 0       | Mandatory, first year|
| Current Topics in Cell and Developmental Biology (Journal Club) | 1 | Elective |
| Lipid and Vascular Biology                      | 1       | Elective              |
| Microbiology and Immunology Seminar Series      | 1       | Elective              |
| Research Techniques (laboratory rotation)       | 3       | 2 rotations required  |
| Teaching                                        | 0       | 50 hours required     |
| Work in Progress Seminars                       | 1       | Attendance and annual presentation required |

**Total Credit Requirement:** 46 Credits
**NEURAL AND BEHAVIORAL SCIENCE: PROGRAM OF STUDY**

<table>
<thead>
<tr>
<th>Fundamental Courses</th>
<th>Credits</th>
<th>Program Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Biochemistry</td>
<td>4</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Introduction to Cellular and Molecular Neuroscience</td>
<td>3</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Neuroscience Block of First-Year Medical Course (includes lab)</td>
<td>6</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Responsible Conduct in Research</td>
<td>1</td>
<td>Mandatory</td>
</tr>
<tr>
<td><strong>Major Courses (choice of 2 required)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Molecular and Cellular Biology 1</td>
<td>4</td>
<td>Major Elective</td>
</tr>
<tr>
<td>Molecular and Cellular Biology 2</td>
<td>4</td>
<td>Major Elective</td>
</tr>
<tr>
<td>Gross and Cellular Neuroanatomy</td>
<td>3</td>
<td>Major Elective</td>
</tr>
<tr>
<td>Mathematical Modeling in Life Sciences</td>
<td>2</td>
<td>Major Elective</td>
</tr>
<tr>
<td>Cellular Physiology and Biophysics</td>
<td>3</td>
<td>Major Elective</td>
</tr>
<tr>
<td>Membrane Function and Junctional Transmission</td>
<td>2</td>
<td>Major Elective</td>
</tr>
<tr>
<td>Principles of Instrumentation in Neuroscience</td>
<td>2</td>
<td>Major Elective</td>
</tr>
<tr>
<td>Dendritic Spines: Structure, Function, and Plasticity</td>
<td>2</td>
<td>Major Elective</td>
</tr>
<tr>
<td>Developmental Biology</td>
<td>3</td>
<td>Major Elective</td>
</tr>
<tr>
<td><strong>Electives Grouped by Theme</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Biophysics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Topics in Physiology and Biophysics</td>
<td>2</td>
<td>Elective</td>
</tr>
<tr>
<td>Directed Readings in Electrophysiology</td>
<td>3</td>
<td>Elective</td>
</tr>
<tr>
<td><strong>Developmental Neurobiology</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Concepts in Developmental Neuroscience</td>
<td>2</td>
<td>Elective</td>
</tr>
<tr>
<td><strong>General Neuroscience</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selected Topics in the Limbic System</td>
<td>3</td>
<td>Elective</td>
</tr>
<tr>
<td>Directed Readings in Neuroscience</td>
<td>2</td>
<td>Elective</td>
</tr>
<tr>
<td>Discussions in Behavioral Neuroscience</td>
<td>1</td>
<td>Elective</td>
</tr>
<tr>
<td><strong>Molecular Neuroscience</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse Genetics for Neuroscientists (includes lab component)</td>
<td>3</td>
<td>Elective</td>
</tr>
<tr>
<td>Current Topics in Experimental Pathology (Neuropathology)</td>
<td>1</td>
<td>Elective</td>
</tr>
<tr>
<td>Human Immunology</td>
<td>3</td>
<td>Elective</td>
</tr>
<tr>
<td>Proteomics and Genomics</td>
<td>1</td>
<td>Elective</td>
</tr>
<tr>
<td>Biochemistry: Protein Structure and Function</td>
<td>4</td>
<td>Elective</td>
</tr>
<tr>
<td>Advanced Immunology</td>
<td>3</td>
<td>Elective</td>
</tr>
<tr>
<td><strong>Neuropharmacology</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Directed Readings in Neuropharmacology</td>
<td>2</td>
<td>Elective</td>
</tr>
<tr>
<td>Current Topics in Neuropharmacology</td>
<td>1</td>
<td>Elective</td>
</tr>
<tr>
<td>Pharmacology Methods and Experimental Pharmacology</td>
<td>2</td>
<td>Elective</td>
</tr>
<tr>
<td>Selected Topics: Pharmacology of Cell Death</td>
<td>1</td>
<td>Elective</td>
</tr>
<tr>
<td><strong>Seminars, Journal Clubs, and Other Requirements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seminar Series in Neuroscience</td>
<td>1</td>
<td>Mandatory, all years</td>
</tr>
<tr>
<td>General Neuroscience Journal Club</td>
<td></td>
<td>Choice of journal club, mandatory, all years</td>
</tr>
<tr>
<td>Molecular and Cellular Neuroscience Journal Club</td>
<td>1</td>
<td>Choice of journal club, mandatory, all years</td>
</tr>
<tr>
<td>Research Techniques</td>
<td>3</td>
<td>2 lab rotations required</td>
</tr>
<tr>
<td>Teaching</td>
<td>0</td>
<td>50 hours required</td>
</tr>
<tr>
<td>Work in Progress Seminars</td>
<td>1</td>
<td>Attendance and annual presentation required</td>
</tr>
<tr>
<td><strong>Total Credit Requirement:</strong></td>
<td>46</td>
<td>14 Credits Mandatory</td>
</tr>
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</table>

(exclusive of seminar, journal club)
Courses of Instruction

**GMCB 0201 Molecular and Cellular Biology I**  
*Stacy Blain, PhD*

This course provides the molecular foundation for students in the MCB Doctoral Program. Each week there are two 2-hour lectures and one 2-hour discussion period. Topics include DNA chemistry; replication and repair; transcriptional machinery in prokaryotes and eukaryotes; regulation of transcription; RNA processing; protein synthesis; gene regulation in prokaryotes; chromatin structure, function and remodeling; genetics in the age of genomics; epigenetic regulation of gene expression in higher eukaryotes; molecular immunology; site-specific recombination; lambda; VDJ and class switching; gene conversion; and hypermutation.

Discussion sessions constitute an important part of the course and introduce students to the critical reading of research papers. Course instructors will assign 1-2 research articles the week before the corresponding lectures. Students should read the articles thoroughly before the session and prepare to discuss them. The level of participation will be noted. Exam questions are taken from material covered in both lectures and discussion sessions. Essay questions are designed to test integrative knowledge rather than knowledge of simple, factual details. Students should be prepared to propose experiments that will test a given hypothesis or idea.


**GMCB 0202 Molecular and Cellular Biology II**  
*William Chirico, PhD*

This first-year graduate-level course is designed to provide students in the MCB Doctoral Program with a broad background in cellular biology. The course is divided into three sections: cell structure/function, cell signaling, and cell development. Each week there are two 1.5-hour lectures and one 1.5-hour journal discussion period. The lectures cover topics and experimental approaches used in cell biology.

The purpose of the discussion groups is to reinforce the information and concepts presented during the lectures. Students critically review at least one representative publication during each discussion period. The paper, which is chosen by the instructor, is available one week before the class meeting. Each student is responsible for all aspects of the discussion paper. Students are selected at random to describe the purpose of the experiment, to present the methods and results, and to critically evaluate the paper.

An exam is given at the end of each section of the course. Questions may have different formats, including but not restricted to short answer, essay, and experimental design. Exam questions may cover lecture and discussion material. Students are evaluated on their contributions to the discussions as well as on their performance on exams.

Reference text: It is recommended that students purchase the latest edition of either *Molecular Biology of the Cell*, Alberts, et al. (Garland Publishing Inc.), or *Molecular Cell Biology*, Lodish, et al, (W. H. Freeman and Co.). Offered annually in the spring semester, meets twice per week for 1.5 hours each session; 6 credits.

**MCB 0203 Research Seminars in Molecular and Cellular Biology**  
*Ming Zhang, MD, PhD; Ed Quadros, PhD; William Chirico, PhD*

Research seminars are presented by Downstate faculty and visiting speakers. Once every other week in the fall and spring semesters; ½ -1 credit per semester. Mandatory attendance.

**G BIO 0203 Graduate Biochemistry**  
*Mary Makowske, PhD*

Graduate Biochemistry is one of two courses in the Graduate School Core Curriculum. It is a lecture course that meets three times a week for 1.5-hours per session. Topics include proteins, protein purification and analysis, enzymes and kinetics, bioenergetics, carbohydrate chemistry, lipid metabolism, amino-acid metabolism, nucleotide metabolism, metabolic integration, and hormone signaling. Grades are based on the results of four written examinations and one oral presentation. The topic of the oral presentation is selected at random by the instructor from eight assigned topics, all of which must be prepared.

There is no required text; individual lecturers suggest a written source of information to supplement the lecture material.

Offered annually in the fall semester; MCB students take the course in the first year; NBS students take the course in the second year. 4 credits.

**GRSC 0500 Responsible Conduct in Research**  
*Alice Herb, JD, LLM*

This course is designed to acquaint PhD and MD/PhD candidates in the sciences with the ethical and legal principles and practices that will guide the manner in which they conduct and report scientific research now and in the future. The goals of the course are to provide an ethical framework from which to identify and consider dilemmas arising in the course of their or other's research, to create an appreciation of the importance and value of ethical principles to science, and to become sensitive to the ethical and legal implications and questions that surface in the pursuit of new and untried scientific discoveries.

To assure a better fusion of science and ethics, the course is taught by a team consisting of an attorney/ethicist and a scientist. The ethicist, Professor Herb, provides the continuity and consistency of material while the scientist, a faculty member, brings the scientific perspective, methodology, and context. Experts in areas such as patent law may be invited as guest lecturers.

The course is planned to begin at a point that would be most logical—the beginning of a research project—and proceed along the continuum of scientific research: how a project is developed and
structured; if and how it gets funded; who gets credit; what, where, and how it gets published; what can go wrong; what the implications of the research may be to human subjects and animal subjects; and what the implications of the research itself may be in a socioeconomic context. (Example: the Human Genome Project.)

Instruction is both didactic and interactive. For each session, students are expected to read the assignment, reflect, and write a one-page paper on the material and be prepared to engage in in-depth discussions. The cultural diversity of the student body is not only acknowledged, but special efforts are made to explain differing cultural values. Spring semester; 1 credit.

GRSC 0520 Entrepreneurship in Academia
David Schoenhaut, PhD

In this series of presentations, guest speakers representing several areas of expertise in biomedical technology entrepreneurship have been recruited to give students (all members of the Downstate community are also welcome) a first-hand view of the principles and challenges of beginning a biotechnology business venture. The focus is on information and experiences relevant to how laboratory research and clinical investigators at Downstate might proceed to commercialize concepts and discoveries emerging from their academic work. Presentations include personal narratives of the pathways taken by several biomedical entrepreneurs to start and grow their companies. Other topics covered will include: principles and protection of intellectual property, funding through the SBIR/STTR program, strategic business partnering, financing and structuring a biotechnology company, obtaining FDA approval for new clinical products, and the role of the University Technology Transfer Office in facilitating technology commercialization. Spring semester; 1 credit.

GRSC 0700 Scientific Writing
Mark Stewart, MD, PhD

The objectives of this course are: 1. To understand the differences between thesis documents, scientific papers, and grant applications; 2. To develop strategies for planning and writing each type of scientific document; 3. To understand the review process for papers and grants; 4. To become familiar with resources that will offer detailed specific guidance for grant applications to the National Institutes of Health and other funding agencies; and 5. To understand how to locate funding opportunities, including those for students, postdoctoral fellows, and new investigators. Fall semester; 1 credit.

GACB 0109 Seminar Series in Lipid and Vascular Biology
M. Mahmoud Hussain, PhD

This seminar series is intended to expose graduate students to state-of-the-art developments in the fields of lipid, vascular biology, and atherosclerosis. World-famous investigators are invited to present their latest developments. Students get a chance for informal discussion with the speakers. Weekly, fall and spring semesters; ½ - 1 credit per semester.

ANCB G-512 Developmental Biology
Faculty

The course is expected to broaden the students’ exposure to current research in developmental biology. This advanced course combines faculty lectures and student presentations. Students introduce the topics by providing background information on the specific organ systems whose development is covered by the faculty lecture.

The required textbook is Developmental Biology (6th Edition), Scott Gilbert. For all student background sessions, appropriate chapters and sections from Gilbert are the primary source from which students should draw, followed by other textbooks or reference books that may have more in-depth information on a specific topic. Each student confers with the faculty member for whom he or she is presenting background material, in order to obtain guidance on what information should be presented. Offered annually, the class meets once a week for 2 hours. 3 credits.

GBME 0610 Cellular and Molecular Neuroscience
Faculty

This course provides a comprehensive overview of cellular neuroscience and consists of 20 lectures and two exams. The course is roughly divided into three parts. The first part concentrates on the physiology and biophysics of neurons and includes topics such as bioelectricity, ion channels, and membrane potentials. The second part concentrates on neuronal signal transmission, gene expression, and transport of RNA and protein, and includes such topics as second messengers and regulation of mammalian adenyl cyclases. The third part is an in-depth look at synaptic transmission and plasticity, including such topics as neurotransmitters and neuropeptides, neurotransmitter receptors, presynaptic activity, and the neuromuscular junction.


GBME 0620 Biomedical Imaging I
Faculty

The objective of the course is to provide a thorough grounding in the mechanisms and concepts related to image acquisition and subsequent image processing in various biomedical imaging modalities. Course material falls into two broad principal areas: an extensive overview of mathematical and physical considerations in instrumentation common to all forms of biomedical imaging, and an in-depth treatment of specific modalities. The latter includes imaging based on interac-
GBME 0621
Biomedical Imaging II

Faculty
This course introduces the mechanisms and concepts related to image acquisition and subsequent image processing and image formation in various biomedical imaging modalities. Building on material covered in Biomedical Imaging I, the second semester of the imaging sequence focuses on advanced topics such as functional magnetic resonance imaging (fMRI), ultrasound imaging, biomagnetic imaging, and optical tomographic imaging (OTI).

The goals of the course are to introduce students to basic instrumentation and physical processes underlying biomedical imaging and to make them aware of data collection in basic biomedical imaging modalities and how to obtain cross-sectional images from tomographic data sets for various imaging modalities. The course demonstrates the importance of general signal-processing tools for biomedical imaging processing. The class meets once a week for 3 hours. Offered annually in the fall semester; 3 credits.

GBME 0655
Biomedical Instrumentation II

John N. Carter, PhD
A project directed course, specifically geared to the future needs or hopes of the students or a course in signal acquisition, processing and control based on instrumentation amplifiers, analog-to-digital converters and either desktop computers or micro controllers. This might include IR spectra collection from skin for metabolite concentration profiling. One element driving the decision will be what resources are available to carry out the curriculum. Biomedical Instrumentation (GBME 0650), a background in computer signal processing or permission of the instructor will be the prerequisites for the new course. Spring semester, 2 credits.

GBME 0660
Microcontroller Practicum

John N. Carter, PhD
Hands-on course on micro-controllers, their programming and use in real-world applications: Assembly language programming (including when and where to use it over C); C language programming; Micro-controller fundamentals; Programming micro-controller for applications: serial devices, EEPROM use, analog-to-digital conversion and timers/pulse-width-modulation; Real-time programming (real-time operation/communications: how a real-time executive/scheduler functions). The C programming is based on ANSI C (plus micro-controller extensions) and as such once learned can be applied to any application and/or environment that supports the language. Assembly language is at the level of machine-code, where the user has direct control over all operations of the computing engine. Again, once you learn assembler you can learn the assembler for another platform by studying some specific rules such as addressing-modes and instruction types. This, however, is not that difficult—once you have seen one assembler you have seen them all. Micro-controllers are essentially microcomputers that can interface with the real world. Most of what you learn could be useful in your lab work, as a solid introduction into programming and will give you a leg-up in evaluating electronics hardware you may need to buy or have made in the future. Spring semester, 2 credits.

GBME 0945
Recombinant DNA Technology: A Practical Approach

Faculty
The course consists of lectures and demonstrations given one evening a week for two hours. It covers practical aspects of recombinant DNA technology, including fundamental aspects of gene expression, restriction enzyme cleavage, plasmids, cloning, genetic transformation of bacteria, protein expression vectors, basic principles of protein purification, and manipulation of cloned genes (site-directed mutagenesis).

Laboratory demonstrations illustrate the following methodologies: digestion of DNA with restriction endonucleases and resolution of DNA fragments by gel electrophoresis; cloning vectors, genetic transformation of bacteria; screening of recombinant plasmids by protein expression; purification of recombinant fusion proteins by affinity chromatography. Offered annually in the spring semester; 3 credits.

GMCB 0101
Advanced Virology

Faculty
The course offers an in-depth consideration of the replication and biology of the seventeen major animal virus groups. In addition to molecular aspects of viral replication, the following topics are covered: interferons, vaccines, virus-cell interactions, and host response to viral infections. Offered in the spring semester of alternate years; 3 credits.

GMCB 0120
Work-in-Progress Seminars

Stacy Blain, PhD and Brahim Chaquour, PhD
Each MCB student is required to present a research seminar to members of the Program annually. Weekly, fall and spring semesters; ½ - 1 credit per semester. Mandatory attendance.

GMIC 0105
Seminar Series in Microbiology and Immunology

Christopher Roman, PhD
A series of presentations by invited scientists and Downstate faculty. Ongoing research is discussed to keep the audience abreast of current developments. Offered in the fall and spring semesters; ½ - 1 credit per semester.
Molecular Genetics

In the spring semesters; 3 credits.

Students are given research papers and complementary review articles on these topics to study for one week. The papers are then discussed in a two-hour session with the purpose of integrating the scientific findings and enhancing the students’ insight into fundamental immunological processes and knowledge of research techniques and experimental approaches.

Students become familiar with the need to develop model systems to address certain scientific problems. The final exam, in essay form, tests students’ ability to develop a research protocol for a posed problem in at least two of the topics discussed during the course. Prerequisites for this course are completed courses in Biochemistry, Cell and Molecular Biology, and a solid knowledge of Basic Immunology. Spring semester; 3 credits.

Neural and Behavioral Science Seminars

An outstanding series of advanced research seminars that exposes students to world leaders in their respective fields from other institutions as well as to faculty who participate in the Neural and Behavioral Science Program. Weekly, fall and spring semesters; ½ - 1 credit.

Work-in-Progress Seminars

Student participation in a work-in-progress seminar in which each student presents an annual seminar on his or her research to other students and faculty of the program. Weekly, fall and spring semesters; ½ - 1 credit per semester.

Principles of Instrumentation in Neuroscience

This course reviews the theory, design, and use of instruments for neuroscience research (emphasis on neurophysiology). Instruments for recording electrical activity from single neurons and populations, stimulation of excitable cells, signal processing, and data reduction and analysis are covered by faculty. Also included are clinical contributions on neurorobotics applications in surgery and neuroengineering aspects of orthopedics. Spring semester, 3 credits.

Dendritic Spines: Structure, Function, and Plasticity

Dendritic spines are protrusions along the surface of dendrites that receive synaptic input from axonal terminals. Although discovered over a century ago by Santiago Ramon y Cajal, it has become clear only in recent years that dendritic spines, in their capacity as postsynaptic microcompartments, are focal points for long-term structural and functional modulations of synaptic transmission. With tens of thousands of spines per dendritic arbor of a typical principal neuron (e.g., a pyramidal cell), the potential for input-specific modulation is immense. Novel experimental approaches, using techniques ranging from molecular to imaging, have now provided remarkable insights into structural and functional spine plasticity. The goal of this advanced course is that the student develops an in-depth understanding of the mechanisms as well as the biological relevance of such plasticity.

The course begins with introductory lectures and subsequently moves on to discussions of specific recent papers on the subject matter. Successful participation will be evaluated based on the presentation of papers, active participation in the discussions, and completion of a mini-review of a selected topic that was discussed in the course. Fall and spring semesters; 2 credits.
GNBS 0230
Reverse Genetics for Neuroscientists
Ellen Hsu, PhD
This course introduces students to the applications of recombinant DNA technology for gene cloning and for the study of gene structure and function. Selected papers on specific techniques or approaches are presented and discussed, beginning with gene isolation and gene characterization, followed by functional studies using transfection, transgene, and gene-replacement techniques. Some limited laboratory work is included. The course is offered when sufficient numbers of students demonstrate an interest by writing to the course director. 4 credits.

GNBS 0240
Gross and Cellular Neuroanatomy
Faculty
An advanced neuroanatomy course that reviews specific methods for fixation, staining, and imaging tissue. A particular method or small set of related methods is chosen at the course outset for review during the semester. Lectures are supplemented with text and original literature readings. Actual use of techniques and microscopy as available. 3 credits.

GNBS 0250
Cellular Physiology and Biophysics
Faculty
This course covers the basic concepts of equilibrium thermodynamics, molecular interactions, and kinetics. Basic membrane processes, including membrane potentials, channels, active transport, and exocytosis are covered, with special emphasis on excitable cells. Ligand-receptor interactions, second messenger systems, and other signaling mechanisms are reviewed. 2 credits.

GNBS 0504
Membrane Function and Junctional Transmission
Faculty
A reading and discussion course that traces the development of the understanding of fundamental signaling mechanisms within and between cells in the nervous system. Original papers (both historic and current) are used as focal points for discussion. 2 credits.

GNBS 0100
Neuroscience
John Kubie, PhD
The course consists of lectures, neuroanatomy laboratory exercises, neurophysiology labs and conferences. It is taught in conjunction with the Neuroscience Block (MS 101) that is given in the first year of the medical school curriculum. Therefore, most course activities are taught to a mix of graduate and medical students. The thirty-eight lectures survey Cellular Neuroscience, but focus on Systems and Behavioral Neuroscience. In the six sessions (18 hours) of Neuroanatomy Gross lab, students use whole brains, sections, and dissections to guide learning. In the two sessions (6 hours) of neurohistology lab, students are taught the general properties and histological appearance of nervous tissues as well as the microscopic anatomy of the cerebral cortex, eye, and ear. In the three sessions (6 hours) of pathway review, students use myelin-stained material to review brain connectivity. There are two neurophysiology laboratory sessions, one focusing on membrane physiology and the other on reflexes. Students are evaluated with two practical exams and a written exam. The practical exams, identical to the ones given to medical students, cover gross brain anatomy, neurohistology, and myelin-stained human brain sections. The written exam is an essay exam. Spring semester; 6 credits.

GPTH 0110
Human Immunology
Faculty
The objective of this course is to provide a thorough understanding of Human Immunology in the context of human disease and Clinical Laboratory Immunology. Course material includes immunological mechanisms of disease, including allergy, atrophy connective tissue diseases (rheumatoid arthritis, systemic lupus erythematos, psoriasis), immunodeficiency states, neuroimmunology, and immune response to infections. The course also covers principles, methods, and interpretation of diagnostic immunology tests. The course covers two weeks of intense training, with lectures and discussion sessions, student presentations, and “hands-on” experience in Clinical Laboratories. There are daily morning sessions (2-3 hours) and afternoon lecture/discussion sessions (2-3 hours). Spring semester; 2 credits.
INTRODUCTION
This interdisciplinary doctoral program is jointly administered by both SUNY Downstate's School of Graduate Studies and Polytechnic Institute of New York University. It is a product of the Strategic Alliance for Fostering Research and Education in Biomedicine and Bioengineering. The first BME PhD students entered in 2006. The doctoral program builds on Polytechnic Institute's successful MS program in Biomedical Engineering in which Downstate faculty members mentor student research projects on their own campus. The two campuses are located only 20 minutes apart by either subway or car.

The following two thesis tracks are offered: i) Biomaterials and Polymer Therapeutics, and ii) Bioimaging and Neuroengineering. These tracks reflect areas of research in which the two institutions have been strong for many years. Faculty members' interdisciplinary research includes neorobotics; neuroengineering, using wireless technology for "search and rescue" rats; optical tomography, a new method of imaging biological tissue using light at near infrared wavelengths; computational neurobiology and brain modeling; bioresorbable material synthesis and processing for applications in tissue engineering, drug delivery, bone screws and more; biosensors for rapid detection and analysis of biological markers; liposome and polymeric drug delivery systems; and new glycolipids that function as effective modulators of the immune response, anticancer agents and adjuvants in vaccine formulations.

PhD DEGREE
The PhD Biomedical Engineering (BME) program accommodates students from diverse academic backgrounds by offering three entry-level pathways that ensure a solid foundation in both biology and engineering. Advanced PhD BME students select one of the two thesis tracks: i) Biomaterials and Polymer Therapeutics, or ii) Bioimaging and Neuroengineering.

Students are required to take at least one Management of Technology course and to participate in a short course called Responsible Conduct in Research. BME students are obliged to attend a BME Seminar Series (at Downstate) or a Colloquium (at Polytechnic). A total of 46 course credits is required.

BME PhD students are expected to pursue at least one semester of experience in wet lab and cell culture. Thesis research is conducted under the supervision of a member of the PhD BME program faculty from Downstate or Polytechnic. Students are broadly trained, with opportunities for exposure to various potential career paths through laboratory rotations at industrial sites in i) Downstate's Advanced Biotechnology Incubator, located adjacent to the campus; ii) the BioBAT, a biotechnology center in the Brooklyn Army Terminal, developed by collaboration between the New York City Economic Development Corporation and SUNY Downstate; and iii) Polytechnic's Center for Biocatalysis and Bioprocessing of Macromolecules, a National Science Foundation Industrial/University Cooperative Research and Education Program, located on that campus. Full tuition fellowships and stipends are available.

MD/PhD DEGREES
In the case of students who are candidates for both the MD in the College of Medicine, and the PhD in Biomedical Engineering, requirements for the PhD are similar to those for students who are candidates for the PhD in Biomedical Engineering only. In the first two years of the program, students follow the standard curriculum of the College of Medicine. MD/PhD students usually spend four years in the School of Graduate Studies taking required courses and pursuing research leading to a PhD thesis. Upon completion of the PhD degree, students return to the College of Medicine to complete their clinical training. As in all SUNY degree-granting programs, academic credits for courses taken in the College of Medicine are transferable up to a maximum of 24 credits toward the PhD degree.

All MD/PhD students are expected to work in research laboratories during the first two summers of their medical school tenure. Members of the MD/PhD committee as well as individual faculty members are available to discuss these options and offer constructive advice to help students select a sponsor. Students may complete their PhD work in either of the two tracks.

In general, MD/PhD students are supported with both a stipend and a tuition scholarship throughout the medical and graduate school years.

ADMISSIONS
PhD BME program applications are reviewed by an admissions committee composed of faculty from both the SUNY Downstate School of Graduate Studies and Polytechnic Institute of New York University. Course requirements for admission to the PhD BME program are the following: at least two appropriate level courses in advanced mathematics and biochemistry, plus courses in physics, biology and/or computer science that are consistent with the candidate’s intended research area. Experience with LABVIEW and MATLAB programs is desirable. In general, other admissions policies and procedures are similar to those for the other two doctoral programs administered by the School of Graduate Studies.
# BIOMEDICAL ENGINEERING: PROGRAM OF STUDY

## A. Bridge Courses

### Biomedical Science:
- BME G 650. Biomedical Instrumentation .................................................................................. 3.0
- BME G 945. Recombinant DNA Technology: A Practical Approach ........................................ 3.0
- BME G 950. Principles of Biological Systems ............................................................................ 3.0

### Computer Science Engineering:
- CS 530. Introduction to Computer Science .................................................................................. 3.0
- CS 580. Computer Architecture and Organization ................................................................. 3.0

### Chemical Engineering:
- CH 900. Selected Topics in Chemical Engineering I ........................................................... variable
- CH 901. Selected Topics in Chemical Engineering II ............................................................ variable

### Electrical Engineering:
- EL 536. Principles of Communication Networks ...................................................................... 3.0
- EL 547. Introduction to VLSI System Design ........................................................................... 3.0
- EL 641. Analog & High Frequency Amplifier Design ............................................................. 3.0

## B. Core Engineering Courses:

### Biomaterials and Polymer Therapeutics Track:
- BE 670. Materials in Medicine ................................................................................................. 3.0
- BE 952. Natural Polymers and Materials .................................................................................. 3.0
- BE 6103. Human Anatomy & Physiology I .............................................................................. 3.0
- BE 6113. Anatomy, Physiology & Biophysics II ....................................................................... 3.0
- CM 771. Introduction to Polymer Science .................................................................................. 3.0
- CM 782. Macromolecules in the Solid State ............................................................................ 3.0
- MT 600. Structure-Property Relationships in Materials .......................................................... 3.0
- MT 620. Plastic Deformation and Fracture .............................................................................. 3.0
- BE 660. Drug Delivery ............................................................................................................... 3.0
- BE 650. Tissue Engineering ...................................................................................................... 3.0
- BE 9433. Protein Engineering .................................................................................................. 3.0
- BE 6753. Orthopedic Biomechanics & Biomaterials ............................................................... 3.0
- CH 633. Transport Phenomena ................................................................................................. 3.0
- CH 773. Thermodynamics I ..................................................................................................... 3.0
- CH 781. Chemical Reactor Analysis and Design ..................................................................... 3.0

### Bioimaging and Neuroengineering Track:
- CS 667. Neural Network Computing .......................................................................................... 3.0
- EL 501. Wireless Personal Communication Systems .............................................................. 3.0
- EL 536. Principles of Communication Networks ..................................................................... 3.0
- BE 6103. Human Anatomy & Physiology I .............................................................................. 3.0
- BE 6113. Anatomy, Physiology & Biophysics II ....................................................................... 3.0
- BE 6232. Image Processing ....................................................................................................... 3.0
- BE 6403. Signals, Systems, Transforms ................................................................................... 3.0
- EL 522. Sensor Based Robotics .................................................................................................. 3.0
- BME G 220. Mathematical Modeling in Life Sciences: Computational Neuroscience ........ 3.0
- BME G 620. Biomedical Imaging ............................................................................................. 3.0
- BME G 621. Biomedical Imaging II .......................................................................................... 3.0

## C. Core Biomedical Science Courses:

### Biomaterials and Polymer Therapeutics Track:
- MCIM G 105. Seminar Series in Microbiology and Immunology ........................................ 1.0
- ANCB G 109. Seminar Series in Lipid and Vascular Biology ................................................ 1.0
- MCB G 113. Molecular Genetics ............................................................................................. 4.0
- MCB G 120. Work in Progress Seminars ............................................................................... 0.0
- MCB G 201. Molecular and Cellular Biology .......................................................................... 6.0
- MCB G 203. Molecular and Cellular Biology Seminar Series .............................................. 1.0
- BIOC G 203. Graduate Biochemistry ...................................................................................... 4.0
- CM 941. Biochemistry I (graduate level) .................................................................................. 3.0
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<tr>
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<th>Course Title</th>
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<td>MCB G 510</td>
<td>Current Topics in Cellular and Developmental Biology</td>
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<td>MCB G 512</td>
<td>Developmental Biology</td>
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<td>BME G 518</td>
<td>Genomics and Proteomics</td>
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<tr>
<td>BME G 945</td>
<td>Recombinant DNA Technology: A Practical Approach</td>
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**Bioimaging and Neuroengineering Track:**

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<th>Course Title</th>
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<td>NBSC G 100</td>
<td>Journal Club in Neural and Behavioral Science</td>
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<td>NBSC G 102</td>
<td>Neural and Behavioral Science Seminar Series</td>
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<td>NBSC G 105</td>
<td>Journal Club Molecular and Cellular Neuroscience</td>
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<td>BME G 610</td>
<td>Cellular and Molecular Neuroscience</td>
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<td>NBSC G 120</td>
<td>Work in Progress Seminars</td>
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<tr>
<td>NBSC G 200</td>
<td>Discussions in Behavioral Neuroscience</td>
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<tr>
<td>NBSC G 202</td>
<td>Selected Topics in the Limbic System</td>
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<td>NBSC G 210</td>
<td>Dendritic Spines: Structure, Function, Plasticity</td>
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<td>CORE G 300</td>
<td>Research Techniques (laboratory rotations)</td>
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<td>NBSC G 500</td>
<td>Directed Readings in Neuroscience</td>
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<td>MCB G 520</td>
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<td>BME G 620</td>
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**D. Other Courses**

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</tr>
<tr>
<td>CORE G 301</td>
<td>Advanced Topics in Responsible Conduct in Research</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>SUNY/Poly BME Seminars</td>
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</tr>
</tbody>
</table>

**E. Elective Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PATH G 103</td>
<td>Current Topics in Experimental Pathology</td>
<td>1.0</td>
</tr>
<tr>
<td>PATH G 106</td>
<td>Immunological Aspects of Atopic and Related Diseases</td>
<td>3.0</td>
</tr>
<tr>
<td>PHRM G 106</td>
<td>Current Topics in Neuropharmacology</td>
<td>1.0</td>
</tr>
<tr>
<td>CM 753</td>
<td>Bioinformatics I: Sequence Analysis</td>
<td>3.0</td>
</tr>
<tr>
<td>CM 754</td>
<td>Bioinformatics II: Protein Structure</td>
<td>3.0</td>
</tr>
<tr>
<td>MCB G 202</td>
<td>Molecular and Cellular Biology II</td>
<td>6.0</td>
</tr>
<tr>
<td>MCB G 203</td>
<td>Molecular and Cellular Biology Seminar Series</td>
<td>1.0</td>
</tr>
<tr>
<td>BE 601</td>
<td>Molecular Immunology</td>
<td>3.0</td>
</tr>
<tr>
<td>BE 630</td>
<td>Transport Phenomena in Biological Systems</td>
<td>3.0</td>
</tr>
<tr>
<td>BE 6753</td>
<td>Orthopedic Biomechanics &amp; Biomaterials</td>
<td>3.0</td>
</tr>
<tr>
<td>CM 905</td>
<td>Enzyme Catalysis in Organic Synthesis</td>
<td>3.0</td>
</tr>
<tr>
<td>CM 906</td>
<td>Combinatorial Chemistry</td>
<td>3.0</td>
</tr>
<tr>
<td>CORE G 520</td>
<td>Entrepreneurship in Academia</td>
<td>1.0</td>
</tr>
<tr>
<td>PATH G 508</td>
<td>Immunopathology of Virus Infections</td>
<td>2.0</td>
</tr>
<tr>
<td>PATH M 110</td>
<td>Human Immunology</td>
<td>2.0</td>
</tr>
<tr>
<td>PHRM G 100</td>
<td>Pharmacology Methods and Exp. Pharmacology</td>
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<tr>
<td>BME G 640</td>
<td>Modern Drug Discovery</td>
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<tr>
<td>BME G 650</td>
<td>Biomedical Instrumentation</td>
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**F. Management of Technology Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>MG 865</td>
<td>Managing Innovation</td>
<td>3.0</td>
</tr>
<tr>
<td>MG 603</td>
<td>Organizational Behav. and Mgmt. Processes in Innovative Corps</td>
<td>3.0</td>
</tr>
<tr>
<td>MG 693</td>
<td>Information Technologies, Systems and Mgmt. in Organizations</td>
<td>3.0</td>
</tr>
<tr>
<td>MG 786</td>
<td>High-Technology Entrepreneurship</td>
<td>3.0</td>
</tr>
<tr>
<td>MG 775</td>
<td>Operations Mgmt. for Knowledge-based Enterprises (1/2 semester)</td>
<td>3.0</td>
</tr>
<tr>
<td>MG 795</td>
<td>Global Innovation (1/2 semester)</td>
<td>3.0</td>
</tr>
<tr>
<td>MG 820</td>
<td>Project Management and Assessment for Technology Managers</td>
<td>3.0</td>
</tr>
<tr>
<td>MG 785</td>
<td>High-Technology Leadership</td>
<td>3.0</td>
</tr>
<tr>
<td>MG 784</td>
<td>Negotiation in Technology-Intensive Sectors</td>
<td>3.0</td>
</tr>
<tr>
<td>MG 787</td>
<td>Intellectual Property for Technology and Information Managers</td>
<td>3.0</td>
</tr>
<tr>
<td>MG 797</td>
<td>Financing the Value Creation</td>
<td>3.0</td>
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</table>

**G. Thesis Research**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>G999</td>
<td>Ph.D. Thesis Research in Biomedical Engineering @ Downstate</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>PhD. Thesis Research in Biomedical Engineering @ Polytechnic</td>
<td></td>
</tr>
</tbody>
</table>
Facilities for Instruction

BASIC SCIENCES BUILDING
The Basic Sciences Building houses the School of Graduate Studies, with space for research, education, and administrative functions. The facility supports basic and clinical research and is used by students in both the School of Graduate Studies and the College of Medicine.

The 541,000-square-foot facility has laboratories for both basic and clinical research, as well as offices for faculty and four lecture halls. The Basic Sciences Building gives students and faculty access to highly specialized research equipment, including, for example, a DNA sequencing facility, electron microscopy, computer-based gel documentation and image analysis, phosphorimaging, and a protein-sequencing center.

HEALTH SCIENCE EDUCATION BUILDING
The campus’s Health Science Education Building (HSEB) houses state-of-the-art classrooms, laboratories, a 500-seat auditorium, and the Medical Research Library of Brooklyn. Included in the HSEB are two floors of study carrels with lockable storage, which serve as “home base” for medical students during their first two years. The carrels are located in multidisciplinary laboratory sites. This arrangement fosters small-group learning. The carrels are equipped with power and data lines, which enable students to connect computers to the library’s computerized data bases.

MEDICAL RESEARCH LIBRARY OF BROOKLYN

Library Hours:
Monday-Thursday: 8:30 am to midnight
Friday: 8:30 am to 5:00 pm
Saturday: 9:00 am to 5:00 pm
Sunday: noon to midnight

Holiday closings and summer hours are posted.

Downstate’s library occupies three floors of the Health Science Education Building and is accessible from the 395 Lenox Road entrance.

The 24/7 Library Information Commons provides comfortable seating for individual and groups; computers and ports, power, printing, and reference service while staff are present.

Resources
The nucleus of the library was formed when the Academy of Medicine of Brooklyn and SUNY Downstate merged in the 1960s.

The collections date from the early eighteenth century, and include an archive of historical materials relating to the history of medicine in Kings County and at the Long Island College Hospital, SUNY Downstate’s predecessor institution. These materials are cataloged and the holdings may be searched on the publicly accessible website: library.downstate.edu.

The library’s website also provides access, both local and remote, to many other resources, including a significant number of electronic journals in full-text. Other resources include FirstSearch, CINAHL (Cumulative Index to Nursing and Allie Health Literature), PubMed, InfoShare, NetLibrary, Info-Trac, and Lexis-Nexis. Remote access is validated through a proxy server.
All computers within the library are connected to the Internet. The library supports wireless connectivity to the Internet, and appropriately configured laptops may be checked out at the Access Services desk for two hours of in-house use.

**Services**

- Access Services requires you to complete registration in the library’s management system in order to take out materials from the library’s collections. This unit also maintains the General Reserve collection, the Special Reserve, which is course-specific and may be available electronically as an E-Reserve item on the library web page. Group study rooms are also available from this unit.
- Inter-Library Loan will procure materials that are not available in the library. These materials may be requested through Illiad, which is found on the library’s web page. Articles requested may be delivered in pdf format to clients’ desktops.
- The Reference unit will conduct generic orientations or customized orientations upon request (718-270-7453). Course- or program-specific orientation or classes may be arranged. Librarians are on duty five days a week, and an online reference chat room that allows a real-time chat with a librarian is also available along with e-mail reference. Print reference resources are available on the lower floor of the library.
- The Institute of Evidence-Based Practice serves all of the colleges, as well as the residency programs through curriculum-integrated sessions. The library has created internationally recognized EBM tutorials, which are available on the library’s web page. Customized instruction is available.
- Learning Resource Services, located on the lower level of the library, comprises the Advanced Learning Resource Center (ALRC), Classroom Services, and the Audiovisual unit. A wide array of computer software and audiovisual programs is available. The ALRC has over 100 seats configured in group and individual viewing rooms, carrels, and three computer-training rooms. Computer application tutorials are available on CDs.
- Classroom Services provides room scheduling and audiovisual services, as well as technical assistance to operate audiovisual equipment such as overhead, slide, and video projectors. Student requests for space and equipment are done through the Student Center. Reservations are preferred by fax (270-7471) or online submission: classrooms.downstate.edu.
- Self-service photocopiers or scanners are available on all floors of the library. Copies for a fee may be made if a print services card is used. Fee-based photocopying services are also available (see Access Services desk for details).
- Printing is available via networked printers located on all floors of the library and also in the ALRC.

For more information please go to the library's website at: library.downstate.edu.

**STUDENT COMPUTING**

**Teaching Labs**
The Health Science Education Building houses the following teaching labs:

- 5th and 6th floor labs - all labs have a computer connected to a smart board, as well as a projector for use by faculty and students within the lab. There are two access points in each room with additional access points strategically located on the floors that provide wireless access at high speed (“N”).

**Laptop Requirement**
Medical students are required to have a personal laptop meeting the specifications listed at sls.downstate.edu/mydownstate (under the computer help section) for use in the second year. This requirement is expected to change to more mobile devices over time.

**MyDownstate (Educational and other Academic Software)**
Access to the main applications used by students can be found on the MyDownstate page located at sls.downstate.edu/mydownstate.

The main applications accessible through MyDownstate are:
- **Prime** - This Learning Management System is used at SUNY Downstate to put educational materials and activities online. Most courses/blocks use Prime to make documents available for download, host Discussion Forums, upload student submissions into DropBoxes, and host computerized exams.
- **New Innovations** - Software used for clinical evaluations and capture of student experience related to patient encounters, used primarily in the third and fourth years of medical education.
- **Banner Student Information System** - Students can register online for upcoming courses, view final course grades, and update their personal information inside Banner. MyDownstate also includes links to other software and information resources available to students.

More detailed information about other resources and assistance can be found in the Student Computing section of the Student Handbook.
University Services

Current and more detailed information appears annually in the Student Handbook.

BANKING

Automated teller machine (ATM) services from JP Morgan/Chase are located in the main lobby of the Basic Sciences Building, near the 450 Clarkson Avenue entrance. A customer-service window adjacent to the ATMs is open Wednesdays, 10 am-3 pm (day and time are subject to change). Students are eligible for free checking during their first year, with no minimum balance requirement.

BOOKSTORE

The University Bookstore, operated by the Faculty Student Association, is located on the main level of the Student Center. It carries books, stamps, office supplies, clothing, and novelty items. Hours: 9:30 am–5 pm on Tuesday, Wednesday, and Friday, and 9:30 am–6 pm on Monday and Thursday. For more information, call 718-270-2486 or go to www.downstate.edu/bookstore.

BURSAR’S OFFICE

Cashier’s window hours:
10 am-4 pm, Monday, Tuesday, Thursday, and Friday
10 am–5:30 pm Wednesday
The Bursar’s Office is responsible for reporting and dispersing to the state comptroller all monies received at SUNY Downstate, except hospital patient receipts. These collections include tuition, dormitory rents, registration deposits, library fines and fees, and dormitory damage fees. The office also disperses all checks made available through all federal loan and scholarship programs, state scholarships and TAP awards, local Center loans and scholarships, and guaranteed loans.

The Bursar’s Office accepts Visa, MasterCard, and the Discover cards for payment of tuition, fees, and dormitory-rent charges. The deadline for registration and tuition payment (to avoid late charges) is generally the last business day before the first day of classes in that semester.

Returning or continuing students who wish to change their out-of-state residency status to in-state residency for tuition purposes must file the appropriate application and supporting documentation with the Registrar’s Office two weeks prior to the mailing of the subsequent semester’s registration packet (approximately one month prior to the start of the semester). Therefore, change of status from out-of-state to in-state must be initiated six weeks prior to the date of registration for the next term. Registration dates are indicated on the academic calendars.

CHAPLAIN SERVICES

The Office of Pastoral Care of University Hospital of Brooklyn offers religious and other support services to patients, families, staff, and members of the Downstate community. The Interfaith Chapel (Room A1-347, University Hospital) is open 24 hours a day for use by all. Times and dates of religious services are posted on the chapel bulletin board. For more information, call (718) 270-2594; in an emergency, (718) 270-2121.

CHILDREN’S CENTER

Located at 440 Lenox Road, this is an on-site day-care center that offers developmentally appropriate early-childhood education for children from age eight weeks to five years. Its director and staff are fully qualified to teach young children. The Children’s Center has a sliding fee scale, and there is a $20 nonrefundable application fee. Center hours are 7:30 a.m. to 5:30 p.m. For more information call the Children’s Center, (718) 221-6165.

FACULTY-STUDENT ASSOCIATION

The Faculty Student Association (FSA) provides many student services as well as business and accounting services to campus members. It is an independent, not-for-profit IRS 501©3 corporation with a board of directors comprised of administrative, faculty, and student representatives. FSA administers all Student Activity Fee finances and Student Health Insurance. It operates the University Bookstore, Hospital Gift Shop, ATM Banking, Café 101, and vending and laundry machines. Go to: www.downstate.edu/FSA.

FSA has partnered with Zipcar to provide car rentals. Two Zipcars are available in the State Garage at discounted rates. Go to: www.downstate.edu/zipcar.

FOOD SERVICES

A cafeteria, open to students, faculty, staff, and visitors, is located on the first floor, between the Basic Sciences Building and University Hospital.

The Faculty Student Association oversees Cafe 101, a catering facility located in Room 2-20 of the Student Center. Cafe 101 offers a special catering menu for student club-funded events. Go to: www.downstate.edu/cafe101.

OFFICE OF DIVERSITY AND INCLUSION

The Office of Diversity and Inclusion ensures compliance with federal and state nondiscrimination laws and regulations:

• Title VI and VII of the U.S. Civil Rights Act of 1964 as amended. Prohibits discrimination on the basis of race, color, or national origin in admissions, access to courses of programs, and student policies.

• Title IX of the U.S. Educational Amendments of 1972. Prohibits exclusion from participation in, or denial of benefits, or subjection to discrimination on the basis of sex in any education program or activity receiving federal financial assistance.

• Section 504 of the Vocational Rehabilitation Act of 1973. Prohibits discrimination on the basis of physical or mental handicap in any federally assisted program or activity.

• Age Discrimination Act of 1975. Prohibits discrimination on the basis of age in programs or activities receiving federal financial assistance.

• New York State Human Rights Law. Prohibits discrimination by educational institutions, based on age, race, national origin, gender, sexual orientation, marital status, disability, and military status.

Students have the right to consult with the Office of Diversity and Inclusion if they believe they have been subjected to discriminatory treatment or behavior. For more information on how to file a complaint of discrimination, contact Chief Diversity Officer Kevin Antoine, JD, (718) 270-1738 or 3058, or go to: www.downstate.edu/diversity

OFFICE OF STUDENT AFFAIRS
The Office of Student Affairs serves as a general help and information office to students in all five schools. Student health-insurance information, international students’ immigration forms, and Commencement are only a few of the areas handled through this office. More information is in the Student Handbook and on the institutional website.

International Student Services
Assistance is provided only for immigration forms, and only for matriculated F-1 students. J-1 students are assisted in the Department of Human Resources. Additional information is in the Student Handbook.

OFFICE OF THE REGISTRAR
The office is responsible for class schedules, registration, course selection, course adds/drops, grades, transcripts, certification of student status, certification of academic good standing, loan deferments, veterans’ affairs, and the maintenance of all academic records. Current information and more detailed information is available on the institutional website (www.downstate.edu) and in the Student Handbook.

Current students may review their academic folders by requesting to do so and providing proper identification. It is usually possible to review the folder immediately upon request; however, it may be necessary to make an appointment and return the following day.

Progress reports of academic performance (grades) are available online to students in the School of Graduate Studies and the School of Public Health approximately four weeks after the end of each semester of attendance. Progress reports are available online to students in the College of Medicine at the end of the academic year.

Allow a minimum of two weeks for processing when requesting transcripts, completion of licensure forms, and certification. Overnight or express mail is available at student expense. Arrangements for an overnight mail envelope and prepayment of associated charges may be made through the Bursar’s Office and SUNY Downstate Medical Center’s mailroom.

Changes in local mailing address, including phone number, must be made online. Changes in permanent address must be reported promptly to the Office of the Registrar.

PARKING
State University Garage
Lenox Road between 34th and 35th Streets
Since parking at SUNY Downstate is limited, it has been divided as fairly as possible among faculty, staff, students, and visitors. Reserved parking privileges are available for handicapped individuals.

Temporary Parking
Students with a valid ID may park in the State Garage on Monday–Friday from 2:30 pm–5:30 am and all day on weekends and holidays.

Cost: $1 for the first 12 hours and $1/hr or any part thereafter.

Cost without a valid ID:$3/hour or any part thereafter.

For additional information, contact the Parking Office at 825 New York Avenue, 1st floor, Monday–Friday, 9 am–4 pm, 718–270–3163.

Parking Lot
Located at 404 Winthrop Street between Nostrand and New York Avenues, the parking lot is a non-state facility owned and operated by the HSCB Foundation, Inc. Parking privileges are available to SUNY Downstate employees and students who place their names on the waiting list in the Faculty Student Association Office located in the Student Center, Room 2-09, (718) 270–3187.

The parking lot is open Monday–Friday from 6 am–10 pm. It is closed on Saturdays, Sundays, and holidays. A limited number of transient parking spaces are available at a daily rate. Go to: www.downstate.edu/fsa/parking.html

RESIDENTIAL LIFE AND SERVICES
Upon acceptance to SUNY Downstate, students are sent housing information and application forms by the Office of Admissions. For additional information concerning housing, write or telephone: Residential Life and Services SUNY Downstate Medical Center 811 New York Avenue Brooklyn, NY 11203 Telephone: (718) 270-1466 Fax: (718) 270-1467
sls.downstate.edu/residential_life
Email: residentiallife@downstate.edu

A residence hall is a continually changing environment in which resident students can explore the varied relationships and lifestyles in the process of their development as well-rounded individuals. The residence hall is a place where students live, learn, and relax in an environment that emphasizes both individual freedom and community responsibility.

Downstate’s Residence Life Program is designed to enhance these experiences. Two residence halls, located at 811 and 825 New York Avenue, accommodate approximately 400 students. Assignments for the academic year are made each summer on the basis of computerized lotteries. Students may upgrade their assignment as space becomes available during the course of the year. Upgrades are decided based on availability.
Residence Hall Rooms
Offered as a single or double occupancy. Each residence hall room contains a bed, desk, dresser, closet and lamp for each occupant. Toilet facilities are shared with students in the adjoining room. Community shower rooms are provided for the occupants of the floor. Community kitchens are provided for residence hall occupants in various locations.

Studio Apartments
Offered as a single or double occupancy as well as for married couples and domestic partners. Each studio apartment contains a bed, desk, dresser, and closet for each occupant, plus a standing floor lamp. Each apartment contains a complete compact kitchen and private bathroom.

One-Bedroom Apartments
A unit for two individuals, with a separate bedroom for each student. Each one-bedroom apartment contains a full-size bed, desk, dresser, and closet, plus a standing floor lamp. The apartment also contains a complete compact kitchen unit and private bath. Assignments to one-bedroom apartments are based on a lottery held for all Downstate students.

Off-Campus Housing
The Off-Campus Housing Office provides interested students with information on available housing options outside of the residence halls. An off-campus housing list is maintained by the Housing Office as a service to Downstate students and staff. Downstate employees do not inspect, approve or supervise any off-campus premises. Downstate does not become a party to any private landlord-tenant matters.

UNIVERSITY POLICE
The University Police Department maintains a proactive approach to reduction and suppression of crime on campus. More detailed information is published annually by University Police and in the Student Handbook.

Officers are assigned to:
• Entrances in each building
• Patrol each building
• Booths that are located in areas of high pedestrian traffic
• Radio-equipped motor vehicles

Identification/Facility Access
There are systems in place that are designed to ensure that persons entering Downstate are authorized to do so. I.D. must be worn on campus.

Phones/Alarms
A network of emergency (red) telephones is located throughout Downstate. In addition, a network of panic alarms is located in various places, including the corridors, laboratories, rest rooms, and call-rooms. Both the red phones and panic alarms are linked directly with the University Police Department and are monitored 24 hours a day to ensure a quick response to any emergency.

Shuttle Service
To enable personnel who commute by public transportation to get to their points of departure safely, the University Police Department provides transportation to subway stations and bus stops. There is also a shuttle service to and from the off-campus parking facilities and Downstate. Call 718-270-2626 to request these services.

Escort Service
An unscheduled service designed to bring faculty, staff, and students to local destinations at off-peak hours. Call 718-270-2626 to request this service.

Closed Circuit Television System
A CCTV system monitoring the interior and exterior of the Downstate campus is recorded 24 hours a day by the University Police Department.

Perimeter Lighting
Additional high-intensity lighting has been installed on exterior areas of the campus in addition to that already provided by the City of New York.

Student Responsibilities
Isolation can occur almost anywhere on campus, depending on the time of day, day of the week, or specific building. To avoid isolation, students should:
• Walk and travel in groups, when possible
• Use University Police escort and shuttle services
• Be aware that University Police monitors its telephone switchboard (x2626) 24 hours a day, and that red telephones have direct contact with University Police without dialing
• Be aware that University Police has emergency alarm buttons throughout University Hospital, the Basic Sciences Building, the Health Science Education Building, the Student Center, and dormitories which, if activated, University Police staff are dispatched to investigate.

Residence Hall Security
Downstate has two residential buildings available for students. The following security and safety systems are currently in place:
• 24-hour coverage by University Police officers at 811 New York Avenue.
• Service-desk coverage by professional and student staff (8:30 am-10 pm).
• Electronically locked entrance doors. I.D. cards are swiped for access.
• A panic alarm system on each floor (common areas) and in all public basement areas
• Surveillance cameras in common areas, laundry rooms, and outside entrances.

University Police Annual Report
The Downstate Medical Center University Police/Public Safety Department prepares and publishes an annual security report that complies with the Crime Awareness on Campus Security Act, better known as the Clery Act. This report is available on line at www.downstate.edu/policy/report.html. Printed copies are available upon request from University Police Administrative Office, 450 Clarkson Ave, Box 1201, Brooklyn, NY 11203 or call 718-270-3161.
Student Life
Detailed information is published annually in the Student Handbook.

Downstate offers a friendly environment. Students enjoy an easy camaraderie with professors and each other, on a campus that takes pride in its culturally diverse population.

The Student Center Governing Board plans a busy calendar of events year-round, including feature films, an intramural sports program, cookouts, and minicourses. Admission to most events is free. In addition, the Student Center houses a ticket office, where students can find discount tickets for the theater and other cultural events throughout New York.

STUDENT CENTER
The Student Center, located at 394 Lenox Road, is the focal point of campus social, cultural, and recreational activities. The Student Center was established to further the educational mission and goals of SUNY Downstate by offering programs and services that provide for the personal, professional, social, and cultural development of students, staff, faculty, and alumni. Students are automatically members. Spouses and children may be included at no additional fee.

Recreational facilities include a gymnasium, swimming pool, sauna, hot tub, squash courts, an outdoor tennis court, billiards, and table tennis. Fitness equipment includes a Universal machine, barbells, and an array of bodybuilding and aerobic-exercise machines. The Student Center provides rooms for meetings and small lounges for reading or relaxing. Two pianos are available as well as cable TV with VCR and DVD.

Student Activities Office
The Student Activities Office is located in the Student Center. Questions concerning activities and programs of the Student Center Governing Board should be directed to this office. Within its area of responsibility are: methods and procedures for organizing an event, event registration on the Student Center calendar, alcohol policy, and facility capabilities as they relate to student events and activities, as well as any inquiries regarding the Mini-Course Program or Intramural Activities.

Theater Ticket Service
This office provides tickets to Broadway and off-Broadway shows, operas, ballets, concerts, sporting events, and other cultural activities at greatly reduced prices—often 50 percent or more off the established rate.

Student Organizations
The structure and activities of student organizations may change from year to year, depending on student interests. The following is a representative sampling of clubs and organizations that were active at the time this publication was prepared. For more current information, please see the Student Life section of the website, sls.downstate.edu.

For further information on any organization, please utilize its mailbox at the Student Center.

STUDENT COUNCILS

Student Center Governing Board
The Student Center is the heart of social and community activity on the Downstate campus. Working hand-in-hand with all other student councils, the Faculty-Student Association, and school administrative bodies, the members of the Student Center Governing Board (SCGB) have a crucial and highly influential role in shaping the social, recreational, and athletic affairs of the University student body. The SCGB is open to all SUNY Downstate students.

The board meets once a month at 6:00 p.m. in the Student Center reading room, and its meetings are open to all those who wish to attend. The ten voting members are elected in the spring of the preceding year, but all attendees are encouraged to participate.

The Student Center Governing Board sponsors many of the campus activities, including monthly Coffeehouses, weekly Movie Nights, Basketball Intramurals, Mini Courses, and Winter Ball—the annual semi-formal dance.

Participating on the Student Center Governing Board is not only a great way to get connected with all the people, activities, events, and policy-making of the campus, but a wonderful experience as well. The business of the board is always brief and productive, with a significant percentage of time devoted to improving student life on campus.
University Council
The purpose of University Council (UC) is to promote the interests and welfare of all the students at SUNY Downstate as related to campus-wide activities. The University Council is open to all SUNY Downstate students. University Council funds various clubs and organizations at Downstate and meets monthly. The Council deals with university-wide issues such as SUNY budget cuts and tuition increases, and has an affiliation with the Student Assembly of the State University of New York. UC also co-sponsors activities such as Winter Ball, the annual semi-formal dance, and the annual Holiday Toy Distribution at Kings County Hospital.

Graduate School Council
Most often referred to as the “Grad Council,” its purpose is to promote the interest and welfare of the students in the School of Graduate Studies. Currently the council provides funding for orientation activities, luncheon meetings, travel for guest lecturers, a graduate student lounge, and various social events.

Medical Student Council
The purpose of Medical Student Council (Med Council) is to promote the interests and welfare of the students of the College of Medicine. There are 24 members on the council, six from each class. The first-year class elects six students to represent the class for a one-year term. Towards the end of the first year, there is a second election where the first-year class will elect six students for a three-year term. Med Council meetings are open to all COM students.

Each class has a class president. These representatives attend monthly meetings of Med Council, oversee the class budget and coordinate recreational, educational, and fund-raising events for the class.

Residence Hall Council
The purpose of the Residence Hall Council is to make a safe, comfortable, and convenient environment for students residing in the residence halls. It also uses the student activity fee to hold events for students in the residence halls. The Residence Hall Council is open to all resident students. It holds monthly meetings, as well as study breaks, decorating parties, social events, and picnics. The Residence Hall Council is a forum for students to give their suggestions for improvements in the residence halls.

STUDENT ORGANIZATIONS

AOA - Alpha Omega Alpha
Alpha Omega Alpha (AOA) is the only national medical honor society. The society was created to honor students, residents, and alumni who have shown excellence in their field. The AOA at SUNY Downstate is the Eta chapter for New York. AOA is open to all medical students in the top quarter of the class but limited to a number equal to one sixth of the class.

The student members of AOA are involved in a number of on-campus activities. AOA annually sponsors the Subspecialty Information Forum and the Student to Student Forum to assist in residency preparation. AOA helps run peer tutoring sessions and review classes for COM students. Other activities include recruitment for the medical school, community service, Research Day, Alumni Association events, and the annual AOA guest lecture and dinner. The annual lecture precedes the dinner and is given by a distinguished guest on a pertinent topic.

AMA - American Medical Association
The American Medical Association (AMA) Medical Student Section is dedicated to representing medical students, improving medical education, developing leadership and promoting activism for the health of America. Organized in 1972, the AMA-MSS has over 44,000 members nationwide and represents students from 144 accredited schools. The AMA-MSS strives to be the medical students’ leading voice for improving medical education. Its four core values are advocacy, leadership, excellence, and integrity. AMA is open to all COM students.

AMSA - American Medical Student Association
The American Medical Student Association (AMSA) is a national and local organization of medical and pre-medical students. It is the nation’s oldest independent medical student organization run by and for medical students. There are over 28,000 members nationally. The organization is dedicated to giving medical students a voice in public policy as well as providing medical, social and community service oriented programs. The Downstate chapter of AMSA has programs and activities from September to June. On the national level AMSA sponsors programs through the year such as National Primary Care Day, which is held in October, as well as, a National AMSA Convention in March. AMWA has been addressing these issues for almost 90 years. AMSA is open to all COM students.

AMWA - American Medical Women’s Association
The American Medical Women’s Association is Downstate’s chapter of the national organization. AMWA functions at the local, national, and international level to advance women in medicine and improve women’s health by providing and developing leadership, advocacy, education, expertise, mentoring, and strategic alliances. The American Medical Women’s Association (AMWA) is an organization of 10,000 women physicians and medical students dedicated to serving as the unique voice for women’s health and the advancement of women in medicine. AMWA was founded at a time when women physicians were an under-represented minority. As women in medicine increase in numbers, new problems and issues arise that were not anticipated.

Anesthesia Society
The Anesthesia Society aims to provide a forum for discussion of medical interests specific to the field of anesthesiology and related topics. The society promotes excellence in medical care, education, and research in anesthesiology. This organization is open to all students who have an interest in the topic of anesthesiology.
**APAMSA - Asian Pacific American Medical Student Association**
The Asian Pacific American Medical Student Association is Downstate’s chapter of the national organization that aims to address those issues important to Asian-American medical students.

One part of its mission is to bring together Asians and others interested in the health issues that affect Asians so that they may have a strong, collective, public and political voice. It seeks to promote the health and well-being of the Asian community as well as to help healthcare workers who work with these communities understand how to care for the Asian patient in a culturally sensitive manner. Finally, APAMSA provides an important forum for APA medical students to meet, exchange information and experiences, and develop personally and professionally.

**Cardiology Club**
The Cardiology Club is open to all Downstate students and is designed to support student learning and expose interested students to the field of cardiology. It sponsors regular lectures and events, which present different aspects of the field. The group actively encourages student-faculty interaction outside of the classroom setting.

**Chinese American Medical Society (CAMS)**
CAMS was conceived by a group of New York City Chinese Physicians in 1964 as a network for health professionals. Today the organization is dedicated to promoting the scientific association of medical professionals, to advancing medical knowledge and scientific research with emphasis on aspects unique to the Chinese, and to promoting the health status of Chinese Americans. The purpose of the Chinese American Medical Society is to unite medical students dedicated to promoting the health of the Chinese-American community and raising awareness for their special health needs. Membership is extended to all Downstate students who are interested in reaching out to the Chinese-American community.

**Community Adolescent Medicine Partnership (CAMP)**
CAMP partners with the community to explore issues in adolescent medicine. Key to this goal is a partnership with the KIPP-AMP middle school in Crown Heights that focuses on integrated adolescent health education.

**Daniel Hale Williams Society**
The Daniel Hale Williams Society (DHWS) is SUNY Downstate's chapter of the Student National Medical Association (SNMA), an organization dedicated to healthcare education, leadership development, networking, and community outreach. The organization is named for an African-American physician who was the first to perform open-heart surgery in which the patient survived. The Downstate chapter is part of Region IX in the SNMA, encompassing all medical schools in New Jersey and New York. The DHWS is open to all COM students.

The DHWS’ mission is undertaken with the understanding that medical students of African-American, Caribbean, and Latino descent have unique obstacles that create a common ground of need, even in the face of diverse histories, cultures, and languages. Members support each other emotionally, as well as educationally. All new entering students are assigned a big brother or sister and a faculty mentor through the Office of Minority Affairs. DHWS holds monthly meetings, hosts an annual Premedical Conference, and participates in the celebration of Latino and Black History Months. Its members are active in community events, such as health fairs, preventive medicine outreach programs, and mentorship to various high schools and colleges in the Brooklyn area. The highlights of the year are the SNMA National Convention held in the spring and the Annual Senior Dinner.

**Dermatology Club**
The purpose of the Dermatology Club is to foster a broad educational goal of raising awareness of the field of dermatology. The club is both a social and cultural organization, determined to design and execute community outreach programs to educate diverse populations about dermatologic conditions prevalent in their communities.

**Downstate Christian Fellowship**
The Downstate Christian Fellowship (DCF) is SUNY Downstate’s chapter of the Christian Medical and Dental Associations (CMDA), the national associations of Christian physicians and dentists. It is a nondenominational, student- and faculty-led organization dedicated to supporting fellow Christian students, staff, and faculty of the Downstate community. As part of their ministry, members meet in fellowship with Christians from other New York City medical schools, invite Christian speakers, and reach out to the community through events such as the Christmas gift donation and caroling at the Kings County Hospital and the University Hospital pediatric wards. Open to all Downstate students. Individual membership in CMDA is encouraged but not required.

**Downstate OB/GYN Care Society (DOCS)**
The purpose of DOCS is to introduce the specialty of obstetrics and gynecology to medical students; to encourage students considering OB/GYN; and to create a forum for students to learn about and discuss issues related to the field of OB/GYN. Membership is open to all SUNY Downstate students.

**Downstate Surgery Society**
The purpose of the Surgery Society is to provide students early exposure to the field of surgery. Students have the opportunity to take part in workshops and group discussion with specialists in the field of surgery. The Surgery Club is open to all Downstate students.

**Downstate Urology Club**
The Downstate Urology Club is designed to promote awareness of the field of urology and men's health issues to students. The Downstate Urology Club is open to all Downstate students.
Emergency Medicine Club
The Emergency Medicine Club aims to expose students to the field of emergency medicine and to provide fellow students with opportunities to meet ER physicians and residents and learn about their profession and lifestyle. The club seeks to provide students with the opportunity to relate academic knowledge to clinical experience. To encourage interest in research projects dealing with emergency medicine and its subspecialties and to facilitate enrollment in such research projects. Membership is open to all SUNY Downstate students.

Ethics Society
The Ethics Society was established to expose students of the health professions to issues concerning morality, honesty, and the ethics of medicine, which are encountered daily. Open to all SUNY Downstate students, the Ethics Society seeks to provide a means through which students can express their concerns regarding these issues, and a forum in which these concerns can be further pursued and brought to the attention of the greater community.

Family Practice Club
The Family Practice Club provides a forum for exposure to this generalist specialty. Through club-sponsored speakers and activities students can learn about topics not addressed in other parts of their medical education.

Global Health
The Global Health Club is a forum for students who are interested in global health to share ideas and resources. It also aims to increase awareness of global health issues and opportunities to study or work abroad for the larger body of students at SUNY Downstate.

Iatros
Iatros is the College of Medicine yearbook. Iatros is open to all COM students.

Lesbian, Gay and Bisexual People at Downstate
This organization’s goal is to provide a healthy, open, and tolerant atmosphere on campus and to reduce the sense of isolation felt by many lesbian, gay, and bisexual people because of homophobia. The LGBP is open to all SUNY Downstate students, faculty, and staff.

Maimonides Society
The Maimonides Society is a student-run organization whose purpose is to promote Jewish life at SUNY Downstate. It is intended to increase awareness and education about various Jewish events throughout the year and to provide programs to enhance Jewish life on campus. The organization is open to all Downstate students and faculty.

Medical Artists’ Guild (MAG)
The Guild’s main purpose is to have a club that allows students and other members of the Downstate community to express their ideas or thoughts through writing, poetry, and art. With its monthly publications/online magazine, the Guild seeks to foster an environment that includes poetry readings and art exhibitions on campus.

Medical Students for Choice
Medical Students for Choice is a national organization representing approximately 100 medical schools. It was founded in 1993 by medical students concerned about the serious lack of abortion education in most medical schools, the abortion provider shortage, and the escalation of violence against practitioners who provide abortions. MFSC aims to increase educational opportunities for medical students and ensure that women receive comprehensive reproductive health care.

Muslim Student Association
The Muslim Student Association is designed to support Muslim students of SUNY Downstate and to present Islam to the Downstate community as a comprehensive way of life. It also provides an educational forum regarding its creed. Meetings are discussions on Islamic topics of interest and are open to all members of the Downstate community. The MSA is open to all SUNY Downstate students.

Oncology Club
The Oncology Club seeks to develop students’ interests in the field of oncology through student, community, and patient education and outreach.

Ophthalmology Club
The Ophthalmology Club is designed to educate and expose members of the Downstate community to the various issues and opportunities in ophthalmology. Open to all SUNY Downstate students.

Orthopaedic Surgery and Sports Medicine Club
Designed to educate and expose members of the Downstate community to the various issues and opportunities in orthopaedics. The club is open to all SUNY Downstate students.

Otolaryngology Club
The Otolaryngology Club is designed to educate and expose members of the Downstate community to the various issues and opportunities in otolaryngology.

PANDA
PANDA is an all-inclusive Asian-American organization that promotes Asian-American awareness to the campus at large. It serves to unite all those interested in participating and learning about Asian culture, teachings and ideologies. Activities include quarterly meetings, special speakers and a New Year’s dinner. PANDA is open to all SUNY Downstate students.

Peds R Us
Downstate’s pediatrics club is a forum for all students to learn about and contribute to children’s healthcare and wellness issues through educational and recreational activities. Academically, from lectures and panels by professionals, members hope to gain useful knowledge that can be applied in clinical and other interactive settings with children. Other activities include a reading hour in the pediatrics ward, conducting health education in neighborhood schools, and sponsoring a cooperative community fair with other organizations. Meetings take place every month with events scheduled three times a semester. All Downstate students are invited to participate.
Performing Arts Society
The Performing Arts Society exists to increase the awareness of performance and visual arts and to offer opportunities for participation and expression in the arts. Membership is open to all Downstate students.

Physicians for Human Rights (PHR)
The goal of the PHR National Student Program is to advance health professional students’ understanding and lifelong commitment to human rights activism, and to cultivate their unique contributions as advocates for human rights locally, nationally and globally. The PHR National Student Program supports PHR’s mission by offering students the chance to contribute meaningfully to PHR’s work and developing the next generation of human rights activists.

PNHP - Physicians for a National Healthcare Program
The Downstate chapter of the Physicians for a National Healthcare Program (PNHP) is designed to educate physicians, healthcare workers, students, and the general public on the need for a comprehensive, high-quality, publicly funded healthcare program, equitably accessible to all residents of the United States. The PNHP is open to all Downstate students.

Psychiatry Society
The Psychiatry Society is designed to educate and expose members of the Downstate community to the various issues and opportunities in Psychiatry. The Psychiatry Society is open to all SUNY Downstate students.

Radiology Society
The Radiology Society is designed to educate and expose members of the Downstate community to the various issues and opportunities in Radiology. The Radiology Society is open to all SUNY Downstate students.

SALUD
SALUD is the Downstate chapter of the National Boricua Latino Health Organization (NBLHO), a Latino student group representing health professions students from the northeast region of the United States. Its mission is to recruit Latinos into higher education, educate the public and one another about Latino health issues, advocate for increased Latino representation in health related areas, and promote awareness about social, political, and economic issues as they relate to Latino health. It also serves to create a support network for Latino students.

Student Interest Group for Surgical Neurology
This organization’s purpose is to introduce students to the growing field of invasive neurology, focusing on the many subspecialties of neurosurgery including cerebrovascular, oncological, spinal, and functional, while also focusing on interventional neuroradiology and neurotology.

Student Interest Group in Neurology (SIGN)
SIGN is the American Academy of Neurology’s Student Interest Group in Neurology. SIGN’s purpose is to introduce medical students to the field of neurology through discussions by neurologists, seminars, learning materials, and other relevant activities. SIGN will help students become aware of opportunities and activities related to the field of neurology.

Student Medical Informatics Society
The Student Medical Informatics Society exists to promote the interests of the Medical Informatics field among its students and the Downstate community.

Students 4 Gift
Students 4 Gift aims to give students a chance to learn about organ and bone marrow donation and to sign up on registries.

Students for Social Responsibility
The Students for Social Responsibility (SSR) is a student-run organization committed solely to community service activities. SSR promotes healthcare, reduction of violence, and education within the Brooklyn Community. Major activities include visits to homeless shelter clinics, health education programs, and a high-school anti-violence program. SSR is open to all SUNY Downstate students.

Ultra Sound Society
A forum for students interested in ultrasound and its effect on the world of medicine. It encourages open discussion and the sharing of ideas. Members will have an opportunity to listen to lectures from scholars of radiology and ultrasound and involve themselves in the advancements and progression of the field. Open to Downstate students in all colleges and programs.

Wilderness Medicine Club
This organization is a way for students to learn how to perform basic first aid, safety, and medical treatments in the wild. The group will travel to parks and other locations to practice techniques. The group invites lecturers to talk to students about different types of wilderness medicine.
Faculty

College of Medicine
Dean
Ian L. Taylor

Anesthesiology
Distinguished Service Professor and Chair
James E. Cottrell
Professor
Andree A. Bendo, Ira S. Kass, Rebecca Twersky, Julie Rushbrook, Ketan Shevde, David Wlody
Professor of Clinical
John D. Hartung
Clinical Professor
Alexandru Apostol, Constance H. Hill, Banu S. Lokhandwala, Marilyn A. Resurreccion
Associate Professor
Jun Lin
Clinical Associate Professor
Shanth Ganesan, David Fishman, Helen Lauro, Elie Fried, Michael Mendezsohn, Marina I. Svyatets
Clinical Assistant Professor
Research Assistant Professor
Ming Zhang
Research Instructor
Yunfang Hou

Cell Biology
Distinguished Service Professor and Chair
M.A.Q. Siddiqi
Distinguished Service Professor
Eva B. Cramer
Professor
Research Professor
Edward Quandros
Associate Professor
Visiting Associate Professor
Janice L. Brissette, Richard J. Kollmar
Assistant Professor
Stacy W. Blain, Sabina Hrabetova, Weijun Jin, Samuel Marquez, Sybll P. Patan, Tatyana V. Pestova, Andrey V. Pisarev, Fredric C. Volkert
Teaching Assistant Professor
Shirley Eisner
Research Assistant Professor
Stephen Carleton, Mary Makowske, Irena Manukyan, Eduardo J. Mascarenos, Jason Scalia, Michael A. Wagner, Lorin Weiner, Camilo A. Parada
Research Instructor
Irina S. Abaeva, Parimal Kumar
Estimated Voluntary Faculty: 24

Computer Center
Clinical Assistant Professor
Dimitre G. Stefanov, Jeremy C. Weeden

Dermatology
Distinguished Teaching Professor and Chair
Alan R. Shalita
Clinical Professor
Daniel M. Siegel
Associate Professor
Sharon A. Glick
Clinical Associate Professor
Edward Heilman, Eve J. Lowenstein
Assistant Professor
Usda Alapati, Erin Gilbert
Clinical Assistant Professor
David Avram, Marc R. Avram, Rella Hartman, Jessica J. Kranz, Adam Penstein, Alys C. Penstein, Evangeline Perez, Gina A. Taylor

Estimated Voluntary Faculty: 69

Lists as of 7/31/12
Research Assistant Professor
Wei L. Lee

Estimated Voluntary Faculty: 23

Division of Laboratory Animal Resources
Clinical Professor
Samuel R. Adams
Clinical Assistant Professor
Carol A. Novotney

Emergency Medicine
Associate Professor and Chair
Michael Lucchesi
Professor
Binita Shah
Associate Professor
Bonnie Aquilla, Bonny Baron, Stephen Rinnert, Richard Sinert, Shahriar Zehtabchi
Visiting Associate Professor
Joel Gernsheimer, Eric Legome

Clinical Assistant Professor
Konstantinos Argotis, Charlene An, Abraham Ardolic, Joseph Chirayil, Valeryi Chorny

Clinical Assistant Professor

Estimated Voluntary Faculty: 20

Family Medicine
Professor and Chair
Miriam T. Vincent
Associate Professor
Joseph J. Derose, Richard Sadovsky, Pamela D. Sass
Assistant Professor
Hanna N. Aghabi, Margaret Donat, Temitope Jose, Gloria Mkontobiti
Research Assistant Professor
Gerald W. Deas

Clinical Assistant Professor
Alia Akviris, Karen E. Benker, Dennis Castillo, Anne Czenese, Richard W. Crummer, Kevin T. Custis, Marcia M. Edmond-Bucknor, Eve S. Faber, Charles L. Harewood, Sanford Herman, Scott F. Ippolito, Rosemary M. Jackson, Steven F. Liverpool, Joseph B. Quist, Rebecca R. Seigel, Joan A. Stroud, Sabrina J. Wylie-Adams

Medical Humanities
Clinical Associate Professor
Alice Herb
Clinical Assistant Professor
Kathleen Powderly

Medical Library
Librarian
Andrea B. Markinson
Senior Assistant Librarian
Mary C. Doherty, Mohamed F. Hussain, Violet O. Price, David R. Solomonoff, Christopher J. Stewart

Assistant Librarian
Bharathi Subramaniam, Qihao Wang

Medicine
Professor and Chair
Jeffrey S. Boer
Distinguished Service Professor
Jack DeHovitz
Distinguished Teaching Professor
Eli Friedman, Ellen M. Ginzler
Distinguished Teaching Professor Emeritus
William M. McCormack

Professor

Visiting Professor
Michael Cutaiad, Edmund M. Herold
Professor of Clinical
Hal L. Chadow, Alan S. Feit, Vlado Simko

Clinical Professor
Steven L. Cohn, Jack J. Preibisz, Benjamin Rosenberg

Associate Professor

Associate Professor of Clinical
Robert Barth, Gary Briefel, Jayashree Ravishankar

Clinical Associate Professor

Associate Professor Emeritus
Martin Kramer

Research Associate Professor
Anna Babinskaya, Rajendra Kumar Wadgaonkar

Assistant Professor

Assistant Professor of Clinical
Jin Choi, Jatinther Khokhar, Robert Moran, Morena Poljack

Clinical Assistant Professor
Radiology

Distinguished Service Professor and Chair
Marvin Rotman

Professor
John B. Amadio, Salvatore Scalfani, Arnold M. Strashun

Visiting Professor
Erich K. Lang

Associate Professor
Sundeep Mangla

Clinical Assistant Professor

Estimated Voluntary Faculty: 10

Surgery

Distinguished Teaching Professor and Chair
Antonio Alfonso

Professor
Dale A. Distant, Joon H. Hong, John Kral, Moro O. Saltiu, Nicholas A. Shorter, Francisa Velcek, Thomas Weber

Professor of Clinical
Asher Hirshberg, Stewart Lazow

Clinical Professor Emeritus
Michael R. Goldberg

Associate Professor
Lisa S. Dresner, Patricia A. O’Neill, Adam E. Saltman, Nabil Suntrani

Visiting Associate Professor
Eugene Garrov

Clinical Associate Professor
Joshua Burack, Steven D. Herman, Alexander Schwartzman, Theophilus Lewis

Assistant Professor

Clinical Assistant Professor
Bernard Alter, Jeffrey S. Cane, Melita A. Charles, Albert Duncan, Frank S. Folk, Daniel Kaufman, Jack Y. Liu, Harrison Mu, Fariborz Nobandegani, Aftish Parhiscar, Mark Song, Supoj Tanchajja, Kayvon Tehrani, Peter G. Terry, Robert K. Weiser, Tae Keung J. Wong

Clinical Instructor
Natalie Klinoff, James K. Lam, Heena A. Patel, Chinmaya Sashi

Estimated Voluntary Faculty: 390

Urology

Professor and Chair
Jeffrey P. Weiss

Professor
Ciril J. Godic

Associate Professor
Mark Horowitz, Gobind Laungani

Clinical Associate
Wellman W. Cheung

Assistant Professor
Brian K. McNeil, Jeffrey Schiff

Clinical Assistant Professor
Marwan W. Atillah, William Blank, Yuly N. Chalik, Ivan Colon, Dhanan Ewara, Llewellyn M. Hyacinthe, Mark Irwin, Alex Liptansky, Avidah H. Rudberg, Igor Ryndin, Igor Sergeyev, Arnold Teo

Estimated Voluntary Faculty: 76

Radiation Oncology

Distinguished Service Professor and Chair
Marvin Rotman

Professor
Edward Altweis, Dinara M. Amanbekova, Phoebe Daroyanni, Steph Erickson, Janice Farley-Efejuku, Elise Feldman, Damalia Gibson, Melissa Horowitz, Thulasiram Janardhanan, Cheryl Levine, Carol Lieberman, Ka Magardician, Penni Morganstein, Elena W. Ostrow, Ashwini Pandey, Carlos J. Rodriguez-Perez, Liang Shao, Sheryl Stasiowski, Rachel Steinberg, Nancy Workman

Estimated Voluntary Faculty: 300

Surgery

Distinguished Teaching Professor and Chair
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Estimated Voluntary Faculty: 76
School of Graduate Studies

Dean and Vice President for Research
Mark Stewart

Molecular and Cellular Biology
Associate Professor and Program Director
William Chirico

Faculty
Burton Altura
Randall Barbour
Olayat Batuman
Stacy Blain
Cesar Boggiano
Mohamed Boutjdir
Janice Brisette
William Brunken
Steve Carleton
Robert Carthy
Brahim Chaqour
William Chirico
Eva Cramer
John Danias
Helen Durkin
Richard Feinman
Miriam Feuerman
Stanley Friedman
Greg Gick
Christopher Hellen
Simon Hoffenberg
Sabina Hrabetova
Ellen Hsu
Mahmood Hussain
Xian-Cheng Jiang
Rauno Joks
Christine Jurgens
Richard Kollmar
John Kral
Christopher Lange
John Lewis
Mary Makowske
Jonathan Marmur
Josef Michl
Donald Mills
Foroozan Mokhtarian
Gavin Morrow
Allen Norin
Maja Nowakowski
George Ojakian
Camilo Parada
Christopher Parks
Sybil Patan
Tatjana Pestova
Matthew Pincus
Edward Quadros
Christopher Roman
Julie Rushbrook
M.A.Q. Siddiqui
Alfred Stracher
Gladys Teitelman
Henri Tiedge
Mario Vassalle
Miriam Vincent
Fredric Volkert
Rajendra Wadgaonkar
Michael Wagner
Ming Zhang
Xinsheng Zhang

Neural and Behavioral Science
Professor and Program Director
Peter Bergold

Faculty
Charles Abrams
Juan Marcos Alarcon
Vahe Amassian
Alison Baird
Randall Barbour
Frank Barone
Peter Bergold
Riccardo Bianchi
Andrea Bibbig
Ivan Bodis-Wollner
William Brunken
John Chapin
Ross Clinchy
Jeremy Coplan
Roger Cracco
Howard Crystal
John Danias
Diana Dow-Edwards
Andre Fenton
Steven Fox
Joe Francis
Alan R. Gintzler
Mimi Halpern
Ivan Hernandez
Sabina Hrabetova
Xian-Cheng Jiang
Ira Kass
Kiyomi Koizumi
John Kubie
Jenny Libien
Douglas Ling
William Lytton
Lisa Merlin
Hillary Michelon
Suzanne Mirra
Foroozan Mokhtarian
Herman Moreno
Robert Muller
Nicholas Penington
Katherine Perkins
James B. Ranck
Leonard Rosenblum
Alan Rudell
Todd Sacktor
Frank Scala
Susan Schwartz-Giblin
Sheryl Smith
Armin Stelzer
Mark Stewart
Henri Tiedge
Keith Williams
Robert K.S. Wong

Biomedical Engineering
Research Professor and Program Director
Subrata Saha

Faculty
Randall Barbour
Ivan Bodis-Wollner
John Chapin
John Danias
Helen Durkin
Andre Fenton
Joe Francis
Harry Graber
Sabina Hrabetova
William Lytton
Sundeep Mangla
Suzanne Mirra
Robert Muller
Christopher Roman
Subrata Saha
M.A.Q. Siddiqui
Alfred Stracher
Robert K.S. Wong
Yong Xu
SUNY Downstate has attempted to verify the accuracy of the following faculty information, as of July 31, 2012.

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abaeva, Irina S., PhD</td>
<td>(Degree: Lomonosov Moscow State University)</td>
<td>Professor of Pathology</td>
</tr>
<tr>
<td>Abdelmalek, Ehab E., MD, PhD</td>
<td>(Degree: Lomonosov Moscow State University)</td>
<td>Assistant Professor of Obstetrics and Gynecology</td>
</tr>
<tr>
<td>Abdel-Wahab, Na, MD</td>
<td>(Degree: Yeshiva University)</td>
<td>Clinical Professor of Psychiatry</td>
</tr>
<tr>
<td>Abrams, Charles K., MD, PhD</td>
<td>(Degree: Eastern Virginia Medical School)</td>
<td>Clinical Assistant Professor of Psychiatry</td>
</tr>
<tr>
<td>Abulafia, Ovadia, MD</td>
<td>(Degree: University of Santo Tomas)</td>
<td>Professor of Obstetrics and Gynecology</td>
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<tr>
<td>Abu-Lawi, Khaled I., PhD</td>
<td>(Degree: SUNY Downstate Medical Center)</td>
<td>Clinical Assistant Professor of Pathology</td>
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<td>Adamski, Mateusz, MD, PhD</td>
<td>(Degree: Jagiellonian University)</td>
<td>Clinical Assistant Professor of Neurology</td>
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<td>Adebsi, Akinol, MD</td>
<td>(Degree: University of Badan)</td>
<td>Clinical Instructor of Surgery</td>
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<tr>
<td>Adyemo, Ishola S., MD</td>
<td>(Degree: University of Jos)</td>
<td>Clinical Assistant Professor of Obstetrics and Gynecology</td>
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<tr>
<td>Adler, David, MD</td>
<td>(Degree: SUNY Downstate Medical Center)</td>
<td>Clinical Assistant Professor of Psychiatry</td>
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<tr>
<td>Agarwal, Sanjeev, MD</td>
<td>(Degree: Ghansampati Shri Ji Mahant University)</td>
<td>Clinical Assistant Professor of Obstetrics and Gynecology</td>
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<tr>
<td>Agahi, Hanna N., MD</td>
<td>(Degree: Ruia University)</td>
<td>Clinical Assistant Professor of Family Practice</td>
</tr>
<tr>
<td>Agoritsas, Konstantinos, MD</td>
<td>(Degree: SUNY Downstate Medical Center)</td>
<td>Professor of Emergency Medicine</td>
</tr>
<tr>
<td>Agrawal, Abha, MBBS</td>
<td>(Degree: S.N. Medical College of Agra)</td>
<td>Associate Professor of Medicine</td>
</tr>
<tr>
<td>Ahmadi, Ramin, MD</td>
<td>(Degree: SUNY Downstate Medical Center)</td>
<td>Clinical Assistant Professor of Obstetrics and Gynecology</td>
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<tr>
<td>Akerman, Michael, MD</td>
<td>(Degree: University of Rochester)</td>
<td>Associate Professor of Medicine</td>
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<tr>
<td>Akvis, Alla, MD</td>
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</tr>
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<td>Al-Adhamy, Nabil, MBCHB</td>
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<td>Clinical Assistant Professor of Medicine</td>
</tr>
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<td>Alapati, Usha, MD</td>
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<td>Alexis, Georgette, MD</td>
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<td>Alfter, Bernard, MD</td>
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<td>Altura, Burton M., PhD</td>
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<td>Clinical Instructor of Psychiatry</td>
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<td>Amalanathan, Judy, MBBS</td>
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<td>Amassian, Vahe E., BMBS</td>
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<td>Amend, James A., MD</td>
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<td>Amin, Azad, MD</td>
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Cho, Lwin, MD, Clinical Assistant Professor of Medicine (Degree: University of Nevada-Reno)
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<td>Senior Assistant Librarian (Degree: Pratt Institute-Main)</td>
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<td>El Sherif, Nabil, MBBS</td>
<td>Professor of Medicine (Degree: American University In Cairo)</td>
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<tr>
<td>El Younis, Cherif, MBBS</td>
<td>Associate Professor of Medicine (Degree: University of Cairo)</td>
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<td>Elliott, Michele, MD</td>
<td>Assistant Professor of Pediatrics (Degree: Mount Sinai School of Medicine)</td>
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<td>Elmouchtari, Abdelouahed, MD</td>
<td>Clinical Assistant Professor of Psychiatry (Degree: A I Khawan University)</td>
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<td>Engel, Lenore, MD</td>
<td>Clinical Assistant Professor of Psychiatry (Degree: SUNY Downstate Medical Center)</td>
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<td>Eom, Tae-Sun, PhD</td>
<td>Research Assistant Professor of Physiology and Pharmacology (Degree: Fordham University)</td>
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<td>Erickson, Stephanie, PhD</td>
<td>Clinical Instructor of Psychiatry (Degree: St. John's University-New York)</td>
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<td>Erdij, David J., MD</td>
<td>Professor of Physiology and Pharmacology (Degree: Universidad Nacional Autonoma De Mexico)</td>
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<td>Erogul, Mert, MD</td>
<td>Assistant Professor of Emergency Medicine (Degree: University of Michigan - Ann Arbor)</td>
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<td>Essuman, Adwoa, MD</td>
<td>Clinical Assistant Professor of Anesthesiology (Degree: University of Ghana Medical School)</td>
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<td>Estes, David S., MD</td>
<td>Clinical Assistant Professor of Psychiatry (Degree: Universita Di Bologna)</td>
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<td>Etienne, Guy, MD</td>
<td>Clinical Assistant Professor of Obstetrics and Gynecology (Degree: SUNY Health Science Center at Syracuse)</td>
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<td>Etwaru, Dhanan, MD</td>
<td>Clinical Assistant Professor of Urology (Degree: SUNY at Stony Brook)</td>
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<td>Euler, Dillon, MD</td>
<td>Clinical Assistant Professor of Psychiatry (Degree: Northwestern University)</td>
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<td>Exilhomme, Joseph, MD</td>
<td>Clinical Instructor of Medicine (Degree: University of Medicine and Pharmacy)</td>
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<td>Faber, Eve S., MD</td>
<td>Clinical Assistant Professor of Family Practice (Degree: SUNY Downstate Medical Center)</td>
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<td>Fahmy, Samir, MBBS</td>
<td>Clinical Associate Professor of Medicine (Degree: Alexandria University)</td>
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<td>Fans-Perez, Roseane, MD</td>
<td>Assistant Professor of Psychiatry (Degree: Ross University School of Medicine)</td>
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<td>Farag, Amal, MBChB</td>
<td>Clinical Assistant Professor of Medicine (Degree: Ain Shams University)</td>
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<td>Farley-Efejuku, Janice, PhD</td>
<td>Clinical Instructor of Psychiatry (Degree: Adelphi University)</td>
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<td>Farooqui, Yusra, MD</td>
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<td>Fatehi, Mary I., MD</td>
<td>Clinical Assistant Professor of Obstetrics and Gynecology (Degree: University of North Carolina at Chapel Hill)</td>
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<td>Faustin, Daniel, MD</td>
<td>Clinical Associate Professor of Obstetrics and Gynecology (Degree: Vrije Universiteit Brussel)</td>
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<td>Feig, Robert L., MD</td>
<td>Clinical Assistant Professor of Ophthalmology (Degree: SUNY Downstate Medical Center)</td>
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<td>Feigelson, Eugene B., MD</td>
<td>Distinguished Service Professor Emeritus of Psychiatry (Degree: University of Washington)</td>
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<tr>
<td>Feinman, Richard D., PhD</td>
<td>Professor of Cell Biology (Degree: University of Oregon)</td>
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<td>Feit, Alan S., MD</td>
<td>Professor of Clinical Medicine (Degree: Columbia University)</td>
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<tr>
<td>Felder, Kenneth, MD</td>
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<td>Feldman, Elise, PhD</td>
<td>Clinical Instructor of Psychiatry (Degree: Long Island University - Brooklyn Campus)</td>
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<td>Feldman, Marilyn L., PhD</td>
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<td>Fenton, Andre A., PhD</td>
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<td>Feola, Jeffrey A., MD</td>
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<td>Febriteanu, Janina, PhD</td>
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<td>Feuerman, Miriam H., PhD</td>
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<td>Finkelstein, David, MD</td>
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<tr>
<td>Fisher, Stanley E., MD</td>
<td>Professor and Chairman of Pediatrics and Professor of Cell Biology (Degree: Johns Hopkins University)</td>
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<tr>
<td>Fishman, David, MD</td>
<td>Clinical Associate Professor of Anesthesiology (Degree: SUNY Downstate Medical Center)</td>
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Kassotis, John, MD, Associate Professor of Medicine
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Khan, Munibur, MD, Clinical Assistant Professor of Psychiatry
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Klinoff, Natalie, BS, Clinical Instructor of Surgery
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Knapik, Shawn, MD, Clinical Assistant Professor of Medicine
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<tr>
<th>Name</th>
<th>Title</th>
<th>Degree</th>
<th>Institution</th>
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<td>SUNY at Stony Brook</td>
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<td>Peck, Jacek J., MD</td>
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<td>Wurz University</td>
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<td>Preis, Jana, MD</td>
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<td>Rutgers University-New Brunswick</td>
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<td>Prescott, Ian D., MD</td>
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<td>New York Medical College</td>
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<td>Price, Marlene L., MD</td>
<td>Clinical Assistant Professor of Medicine</td>
<td>Case Western Reserve University</td>
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<td>Price, Violet O., MLS</td>
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<td>Clinical Assistant Professor of Medicine</td>
<td>Tel Aviv University - Sackler School</td>
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<td>Privman, Vladimir, MD</td>
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<td>Proscopi, Everton A., MD</td>
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<td>Pulitzer, Steven, MD</td>
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<td>Drexel University</td>
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<td>Qalla, Hazem M., MD</td>
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<td>Quadros, Edward V., PhD</td>
<td>Research Professor of Medicine and Cell Biology</td>
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<td>Quale, John M., MD</td>
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<td>SUNY Downstate Medical Center</td>
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<td>Quay, Osmond, MD</td>
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<td>Chita Medical College</td>
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<td>Quist, Joseph B., MD</td>
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<td>University of Ghana</td>
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<td>Qureshi, Fahim, MD</td>
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<td>Sindhi Medical College</td>
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<td>Rabinowitz, Simon, MD</td>
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<td>University of Wisconsin Colleges</td>
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<td>Radianu, Andrei E., MD</td>
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<td>SUNY Downstate Medical Center</td>
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<td>Rahman, Habibur, MD</td>
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<td>Rahman, Mafuzur, MD</td>
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<td>Rahman, Mohammed, MD</td>
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<td>Rahman, Kazi, MD</td>
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<td>Ramesh, Nada S., MD</td>
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<td>Ramirez, Miguel, MD</td>
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<td>Ramos, Oscar, MD</td>
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<td>Rangaswamy, Madhvi, PhD</td>
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<td>Rao, Sreedhar, MD</td>
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Scheaffer, Henry A., MD, Clinical Professor of Pediatrics (Degree: New York University)

Schechter, Joshua, MD, Clinical Assistant Professor of Emergency Medicine (Degree: Yeshiva University - Albert Einstein College of Medicine)

Schiff, Jeffrey, MD, Assistant Professor of Urology (Degree: University of Massachusetts-Boston)

Schneider, Arlene T., MD, Clinical Assistant Professor of Medicine (Degree: SUNY Downstate Medical Center)

Schneller, Janet, MD, Clinical Professor of Pathology (Degree: New York Medical College)

Schoeneman, Morris J., MD, Professor of Pediatrics (Degree: Georgetown University)

Schooler, Nina R., PhD, Professor of Psychiatry (Degree: Columbia University)

Schreiber, Abraham, MD, Clinical Assistant Professor of Anesthesiology (Degree: Ben Gurion University of The Negev)

Schulsinger, Alan, MD, Clinical Associate Professor of Radiation Oncology (Degree: SUNY Downstate Medical Center)

Schulze, Robert W., MD, Assistant Professor of Surgery (Degree: Boston University)

Schwartz, David L., MD, Clinical Associate Professor of Radiation Oncology (Degree: SUNY Downstate Medical Center)

Schwartz, Michael S., MD, Clinical Assistant Professor of Radiation Oncology (Degree: Yeshiva University)

Schwartz, Scott, MD, Clinical Assistant Professor of Psychiatry (Degree: Universidad Autonoma De Guadalajara)

Schwartzman, Alexander, MD, Clinical Associate Professor of Surgery (Degree: Crete University)

Schwarz, Steven M., MD, Professor of Pediatrics (Degree: Columbia University)

Sclafani, Salvatore, MD, Professor of Radiology (Degree: SUNY Health Science Center at Syracuse)

Scott, Claude B., MD, PhD, Assistant Professor of Orthopedic Surgery and Rehabilitation Medicine (Degree: SUNY Health Science Center at Syracuse)

Scott, Wayne, MD, Clinical Assistant Professor of Ophthalmology (Degree: Tufts University School of Medicine)

Secco, Michael, MD, Clinical Assistant Professor of Emergency Medicine (Degree: SUNY Downstate Medical Center)

Sedlis, Alexander, MD, Professor Emeritus of Obstetrics and Gynecology (Degree: University of Rome)

Seigel, Rebecca R., MD, Clinical Assistant Professor of Family Practice (Degree: Weill Cornell Medical College)

Seliger, Marlon S., MD, Clinical Assistant Professor of Neurology (Degree: SUNY Downstate Medical Center)

Seligsohn, David, MD, Clinical Assistant Professor of Anesthesiology (Degree: St. George's University)

Selzer, Michael A., MD, Associate Professor Emeritus of Psychiatry (Degree: Case Western Reserve University)

Sepkowitz, Douglas V., MD, Clinical Assistant Professor of Medicine (Degree: University of Oklahoma Norman Campus)

Serafini, Francesco M., MD, Assistant Professor of Surgery (Degree: Universita Della Calabria)

Sergeyev, Igor, MD, Clinical Assistant Professor of Urology (Degree: SUNY Downstate Medical Center)

Sessions, Eric, MD, Assistant Professor of Medicine (Degree: Medical College of Georgia)

Shah, Binita, MBBS, Professor of Emergency Medicine (Degree: The Maharaja Sayajirao University of Baroda, S.S.G. Hospital)

Shah, Binita R., MBBS, Professor of Pediatrics (Degree: M.S. Ramnath Medical College)

Shah, Neal, MD, Clinical Assistant Professor of Anesthesiology (Degree: Northeastern Ohio University)

Shah, Neha S., MD, Clinical Assistant Professor of Medicine (Degree: St. George's University)

Shah, Nilank, MD, MPS, Research Instructor of Physiology and Pharmacology (Degree: Medical College - Sayama University)

Shakibai, Neema, MD, Clinical Assistant Professor of Medicine (Degree: Boston University)

Shalita, Alan R., MD, Distinguished Teaching Professor of Dermatology (Degree: Wayne Forest University)

Shao, Charles Y., MD, PhD, Clinical Associate Professor of Pathology (Degree: Emory University)

Shao, Liang, PhD, Clinical Instructor of Psychiatry (Degree: University of Illinois at Urbana-Champaign)

Shapiro, Alla, MD, Clinical Assistant Professor of Psychiatry (Degree: Moscow State University of Medicine)

Sharma, Anjali, MD, Assistant Professor of Medicine (Degree: Northwestern University)

Sharma, Jagat, MD, Clinical Assistant Professor of Obstetrics and Gynecology (Degree: SUNY Downstate Medical Center)

Sharma, Naresh, MD, Clinical Assistant Professor of Anesthesiology (Degree: NHL Municipal Medical)

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Shen, Hui, MD, PhD, Research Assistant Professor of Physiology and Pharmacology (Degree: Hebei University)

Sherer, David M., MD, Professor of Obstetrics and Gynecology (Degree: Tel Aviv University - Sackler School)

Shetty, Prakash, MD, Assistant Professor of Emergency Medicine (Degree: J.J. Medical College Dog)

Shewde, Ketan, MD, Professor of Anesthesiology (Degree: Makerere University)

Shifteh, Keivan, MD, Clinical Assistant Professor of Radiology (Degree: SUNY Downstate Medical Center)

Shinder, Roman, MD, Assistant Professor of Ophthalmology (Degree: SUNY Upstate Medical Center)

Shmerler, David L., PhD, Clinical Assistant Professor of Psychiatry (Degree: Long Island University - Brooklyn Campus)

Shorter, Nicholas A., MD, Professor of Surgery (Degree: Johns Hopkins University)

Shrier, Eric M., DO, Assistant Professor of Ophthalmology (Degree: University of Medicine and Dentistry of New Jersey)

Shulman, Abraham, MD, Professor Emeritus of Otolaryngology (Degree: University of Berne)

Shwarzberg, Hyman, MD, Clinical Assistant Professor of Radiology (Degree: Yoshiva University Albert Einstein)

Siavashi, Ali, MD, Clinical Assistant Professor of Psychiatry (Degree: The Chubb Institute-North Brunswick)

Siddiqi, Haseeb A., PhD, Associate Professor of Cell Biology (Degree: University of The Punjab)

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Thambireddy, Damodar, MD, Clinical Assistant Professor of Pediatrics
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Zahaykevich, Marta, PhD, Clinical Associate Professor of Psychiatry (Degree: College University)
Zarfaty, Doreen, MD, Clinical Assistant Professor of Psychiatry (Degree: Tel Aviv University - Inc. Sackler School)
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Zeleny, Betka, MD, Clinical Assistant Professor of Anesthesiology (Degree: Universita Karlova V Praze)
Zhang, Ming, PhD, Research Assistant Professor of Anesthesiology (Degree: University of Medicine and Dentistry of New Jersey)
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Zhong, Jun, PhD, Research Assistant Professor of Physiology and Pharmacology (Degree: University of Washington)
Zhou, Jin, PhD, Research Assistant Professor of Neurology (Degree: Chinese Academy of Sciences)
Zinn, Daniel L., MD, Assistant Professor of Radiology (Degree: Wayne State University)
Zinn, Harry L., MD, Assistant Professor of Radiology (Degree: University of Pennsylvania Medical Center)
Zizi, Ferdinand, MA, Clinical Instructor of Medicine (Degree: Walden University)
The State University of New York’s geographically dispersed campuses bring educational opportunity within commuting distance of virtually all New Yorkers and make up the nation’s most diverse system of public higher education.

The State University of New York’s 64 campuses are divided into four categories, based on educational mission, the kinds of opportunities available, and degrees offered.

SUNY offers students a wide diversity of educational options: short-term vocational/technical courses, certificate programs, associate degree programs, baccalaureate degree programs, graduate degrees, and postdoctoral studies. SUNY offers access to almost every field of academic or professional study somewhere within the system—some 6,688 degree and certificate programs overall.

Students pursue traditional study in classrooms and laboratories or work from home, at their own pace, through such innovative institutions as the SUNY Learning Network and Empire State College.

SUNY’s students are predominantly New York State residents, representing every one of the state’s 62 counties. SUNY students also come from every other state in the United States, from four U.S. territories or possessions, and 171 foreign countries.

SUNY enrolls 40 percent of all New York State high-school graduates, and its total enrollment of nearly 410,000 (full-time and part-time) is approximately 37 percent of the state’s entire higher education student population.

SUNY students represent the society that surrounds them. In fall 2003, 18.6 percent of all students were minorities.

In fall 2003, full-time minority faculty members made up more than 12 percent of all full-time SUNY faculty.

As of fall 2003, SUNY numbers more than 2.4 million graduates on its rolls. The majority of SUNY’s alumni resides and pursues careers in communities across New York State, contributing to the economic and social vitality of its people.

SUNY is committed to bringing its students the very best and brightest scholars, scientists, artists, and professionals. SUNY campuses boast nationally and internationally recognized figures in all the major disciplines. Their efforts are regularly recognized in numerous prestigious awards and honors.
State University Campuses

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University at Albany
University at Binghamton
University at Buffalo
University at Stony Brook

**University Colleges**
College at Brockport
College at Buffalo
College at Cortland
Empire State College
College at Fredonia
College at Geneseo
College at New Paltz
College at Old Westbury
College at Oneonta
College at Oswego
College at Plattsburgh
College at Potsdam
College at Purchase

**Health Science Centers**
Health Science Center at Brooklyn (SUNY Downstate)
Health Science Center at Syracuse (Upstate Medical University)
Health Science Center at Buffalo*
Health Science Center at Stony Brook*

**Colleges of Technology**
College of Technology at Alfred
College of Technology at Canton
College of Agriculture and Technology at Cobleskill
College of Technology at Delhi
College of Technology at Farmingdale
College of Agriculture and Technology at Morrisville
Institute of Technology at Utica (SUNYIT)

**Specialized Colleges**
College of Environmental Science and Forestry
Maritime College
College of Optometry

**Statutory Colleges** *
New York State College of Agriculture and Life Sciences at Cornell University
New York State College of Ceramics at Alfred University
New York State College of Human Ecology at Cornell University
New York State School of Industrial and Labor Relations at Cornell University
New York State College of Veterinary Medicine at Cornell University

**Community Colleges**
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Broome Community College at Binghamton
Cayuga County Community College at Auburn
Clinton Community College at Plattsburgh
Columbia-Greene Community College at Hudson
Corning Community College at Corning
Dutchess Community College at Poughkeepsie
Eric Community College at Buffalo, Orchard Park, and Williamsville
Fashion Institute of Technology at New York City
Finger Lakes Community College at Canandaigua
Fulton-Montgomery Community College at Johnstown
Genesee Community College at Batavia
Herkimer County Community College at Herkimer
Hudson Valley Community College at Troy
Jamestown Community College at Jamestown
Jefferson Community College at Watertown
Mohawk Valley Community College at Utica
Monroe Community College at Rochester
Nassau Community College at Garden City
Niagara County Community College at Sanborn
North Country Community College at Saranac Lake
Onondaga Community College at Syracuse
Orange County Community College at Middletown
Rockland Community College at Suffern
Schenectady County Community College at Schenectady
Suffolk County Community College at Brentwood, Riverhead, and Selden
Sullivan County Community College at Loch Sheldrake
Tompkins Cortland Community College at Dryden
Ulster County Community College at Stone Ridge
Westchester Community College at Valhalla

*The Health Science Centers at Buffalo and Stony Brook are operated under the administration of their respective university centers.
**These operate as contract colleges on the campuses of independent universities.
EDUCATIONAL RIGHTS*

The Family Educational Rights and Privacy Act of 1974 protects the rights of students to inspect and review certain educational records and prohibits the nonconsensual release of personally identifiable information from such records which is not “directory information.” Students currently enrolled at Downstate may object to the release of certain categories of directory information pertaining to them by providing written notification to the Office of the Registrar of their college within 14 days following the first day of classes. The categories of directory information at Downstate are listed in the Student Handbook for more detailed information, see the Student Handbook.

- Name, address, telephone numbers, dates of attendance
- Previous institutions, major field of study, degrees conferred
- Past and present participation in officially recognized activities, student photo, date and place of birth

The failure of any student to object specifically to the release of certain or all categories of directory information within the time indicated is interpreted as approval. Please see policy “Family Education Right and Privacy Act” in the Student Handbook for further information.

EDUCATION LAW

The following applies to students who are unable to attend classes on certain days because of their religious beliefs: Sect. 224-a. (New York State Education Law).

1. No person shall be expelled from or be refused admission as a student to an institution of higher education for the reason that s/he is unable, because of religious beliefs, to register or attend classes or to participate in an examination, study, or work requirement on a particular day or days.

2. Any student in an institution of higher education who is unable, because of his or her religious beliefs, to attend classes on a particular day or days shall, because of such absence on the particular day or days, be excused from any examination or any study or work requirements.

3. It shall be the responsibility of the faculty and of the administrative officials of each institution of higher education to make available to each student who is absent from school because of his or her religious beliefs an equivalent opportunity to register for classes or make up an examination, study, or work requirements which he or she may have missed because of such absence on any particular day or days. No fees of any kind shall be charged by the institution for making available to the said student such equivalent opportunity.

4. If registration, classes, examinations, study, or work requirements are held on Friday after 4:00 p.m. or on Saturday, similar or makeup classes, examination, study, or work requirements, or opportunity to register shall be made available on other days, where it is possible and practicable to do so. No special fees shall be charged to the student for these classes, examinations, study, or work requirements or registration held on other days.

5. In effectuating the provisions of this section, it shall be the duty of the faculty and the administrative officials of each institution of higher education to exercise the fullest measure of good faith. No adverse or prejudicial effects shall result to any student because of his or her availing himself or herself of the provision of this section.

6. Any student who is aggrieved by the alleged failure of any faculty or administrative officials to comply in good faith with the provisions of this section shall be entitled to maintain an action or proceeding in the supreme court of the country in which such institution of higher education is located for the enforcement of his or her rights under this section.

6-a. It shall be the responsibility of the administrative officials of each institution of higher education to give written notice to students of their rights under this section, informing them that each student who is absent from school, because of his or her religious beliefs, must be given an equivalent opportunity to register for classes or make up any examination, study or work requirements which he or she may have missed because of such absence on any particular day or days. No fees of any kind shall be charged by the institution for making available to such student such equivalent opportunity.

7. As used in this section, the term “institution of higher education” shall mean any institution of higher education, recognized and approved by the Regents of the University of the State of New York, which provides a course of study leading to the granting of a post-secondary degree or diploma. Such term shall not include any institution which is operated, supervised or controlled by a church or by a religious denominational organization whose education programs are principally designated for the purpose of training ministers or other members of religious denominations or for the purpose of propagating religious doctrines. As used in this section, the term “religious belief” shall mean beliefs associated with any corporation organized and operated exclusively for religious purposes, which is not disqualified for tax exemption under section 501 of the United States Code.

* See the Student Handbook for a full description of student rights.

SUNY Downstate Medical Center reserves the right to alter the existing rules and regulations, and academic programs, as deemed necessary by the institution. SUNY Downstate Medical Center expressly reserves the right, whenever deemed advisable: (1) to change or modify its schedule of tuition and fees; (2) to withdraw, cancel, or reschedule, or modify the requirements for study, degree or any requirement or policy in connection with the foregoing; and (3) to change or modify any academic or other policy.

Essential changes of information in this Bulletin concerning new academic regulations, policies, or programs will be published in newsletters or other University publications. It is the responsibility of each student to ascertain current information that pertains to the individual’s program, particularly with regard to satisfaction of degree requirements by consultation with the student’s advisor, the student’s program, the office of the student’s dean, the Office of Student Affairs, the Registrar’s Office, and other offices as appropriate. In preparing this Bulletin, every effort has been made to provide pertinent and accurate information; however, SUNY Downstate Medical Center assumes no liability for Bulletin errors or omissions.

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State University of New York
Downstate Medical Center

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• School of Graduate Studies
• School of Public Health
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