Duke University School of Medicine

Fourth Year Courses of Instruction

Anesthesiology

Sub-Internships

ANESTH-401C. Cardiothoracic Intensive Care Sub-Internship. The cardiothoracic intensive care sub-internship will allow fourth year medical students to be exposed to and participate in the care of the post-operative and critically ill cardiac and thoracic surgery patient. This patient population has the highest rate of invasive monitoring, echocardiographic and hemodynamic assessment, and advanced circulatory support including utilization of inotropes, vasopressors, and mechanical circulatory support devices (ECMO, LVAD, RVAD, IABP). A working knowledge of these concepts will be critical to a future career in Anesthesiology, Critical Care Medicine, or Surgery. This sub-internship level course will allow students to participate in patient care 6 days a week. This will be an in-depth experience in cardiac critical care medicine. Students will be evaluated on their knowledge, skills, and ability to facilitate patient care in this environment. Students will be expected to take a high degree of ownership of their patients, communication between the critical care, surgery, and anesthesia teams will be emphasized. This sub-internship course will not fulfill acute care curriculum requirement. For more information, contact Course Director contact Course Director Dr. Michael Cutrone: michael.cutrone@duke.edu; Dr. Sharon McCartney, sharon.mccartney@duke.edu or Esther Turner: Esther.Turner@duke.edu. Permission is required for enrollment. Credit: 5. Enrollment: Max-4 Min-1. *Sharon McCartney, MD*

ANESTH-441C. Subinternship in SICU. Students engaging in the Surgical Intensive Care Unit (SICU) sub-internship will gain hands-on experience and broad-based knowledge in managing critically ill surgical and trauma patients. Students will take ownership of a panel of patients under the supervision of Anesthesia and Trauma/Surgical Critical Care attendings and housestaff and actively participate in daily rounds as part of the SICU team. Didactics will include multiple weekly scheduled and informal lectures. Students take one week of four on night call and work on a one-on-one basis with SICU house staff in the supervised management of critically ill patients. Time may be spent in the SICU at Duke University Medical Center (trauma, vascular surgery, liver-kidney-pancreas transplantation, general surgery) and/or the SICU at the Durham VA Medical Center (cardiothoracic and vascular surgery, general surgery). Instruction on the rotation will include particular emphasis on procedures and techniques

necessary for Critical Care, including hemodynamic assessment and monitoring, cardiovascular resuscitation and use of vasoactive drugs, ventilator management such as ARDS, prevention and management of nosocomial infections, and ethical decision making in the ICU. Students are formally evaluated by the SICU house staff and the attending physician. Permission required for enrollment. Contact person is Esther Turner, esther.turner@duke.edu. C-L: SURGERY 441C. Credit: 5. Enrollment: max 2. Course Director: *J. Taylor Herbert, MD, PhD (james.herbert@duke.edu); Faculty: Amy R Alger, MD; Sandy An, MD, PhD; Ioana Antonescu, MD; Yuriy Bronshteyn, MD; Kelli Brooks, MD; Michelle Brownstein, MD; Adjoa Boateng Evans, MD; Desiree Coutinho, MD; Joe Fernandez-Moure, MD; Patrick Georgoff, MD; Daniel Gilstrap, MD; Zac Ginsberg, MD, MPP; Krista Haines, DO; Nazish Hashmi, MBBS; Vijay Krishnamoorthy, MD; Russell-John Krom, MD, PhD; John Lemm, MD; Nitin Mehdiratta, MD; Sean Montgomery, MD; Virginia Parker, MD; Jamie Privratsky, MD, PhD; Omar Al-Qudsi, MD; Karthik Raghunathan, MD; Vanessa Schroder, MD; Mara Serbanescu, MD; Miriam Treggiari, MD, PhD; Cory Vatsaas, MD; Paul Wischmeyer, MD.*

Clinical Science Electives

ANESTH-402C. Cardiothoracic Intensive Care Elective. The cardiothoracic intensive care elective will allow fourth year medical students to be exposed to and participate in the care of the post-operative and critically ill cardiac and thoracic surgery patient. This patient population has the highest rate of invasive monitoring, echocardiographic and hemodynamic assessment, and advanced circulatory support including utilization of inotropes, vasopressors, and mechanical circulatory support devices (ECMO, LVAD, RVAD, IABP). A working knowledge of these concepts will be critical to a future career in Anesthesiology, Critical Care Medicine, or Surgery. This elective level course will allow students to participate in patient care 5 days a week. This will be an in-depth experience in cardiac critical care medicine. Students will be evaluated on their knowledge, skills, and ability to facilitate patient care in this environment. This elective will fulfill acute care curriculum requirement. For more information, contact Course Director Dr. Michael Cutrone: michael.cutrone@duke.edu; Dr. Sharon McCartney, sharon.mccartney@duke.edu or Esther Turner: Esther.Turner@duke.edu. Permission is required for enrollment Credit: 4. Enrollment: Max-4 Min-1. *Sharon McCartney, MD*

ANESTH-430C. Diving and Hyperbaric Medicine. Students participate actively in assigned patient care and clinical projects. Well-focused segments of ongoing clinical work provide intensive exposure to clinical physiology and pharmacology. Students will be assigned an attending physician (mentor), desk and computer space in the Hyperbaric Center. Consultative services are provided for inpatients and outpatients from orthopedics, medicine, radiation oncology, intensive care units, and preoperative and postoperative care units. Specific indications for hyperbaric oxygen therapy are used in clinical care and in developing translational projects. Students are guided in producing concrete clinical presentations and reports related to the field. For more information, please contact Dr. Derrick (bruce.derrick@duke.edu). Secondary contact: Tonya Manning at 684-6726. Permission is required for enrollment Students should meet for rounds on the first day of classes promptly at 7:30 a.m. The location is Hyperbaric Center

Library, 0588 White Zone, CR II Building. Credit: 4. Enrollment Max 2. *Bruce Derrick, MD, and staff*

ANESTH-440C. Clinical Anesthesiology. The student will participate in the pre-, intra-, and post-operative anesthetic management of patients while assigned to an individual resident or attending anesthesiologist. The student will spend time in the general operating rooms, the cardio-thoracic operating rooms, and in various subspecialty areas including labor and delivery, pediatric operating rooms, neurosurgical operating rooms, regional anesthesiology service, and acute pain management. Learning opportunities will include pre-operative patient evaluation, anesthetic technique selection, airway management, pharmacology, physiology, and anatomy. The student will complete various procedures such as airway management, vascular access, ultrasound, and patient monitoring. These areas will be reinforced by problem-based learning discussions, Grand Rounds, and other conferences. In the summer and fall, priority in registration is given to students considering careers in Anesthesiology. Students MUST attend the first day of the section, and are strongly advised not to miss any of the first week. More than 4 absences are not permitted. Schedules for the class will be emailed out prior to the start of the course. For questions and to obtain permission numbers, please contact Esther Turner (esther.turner@duke.edu) or 919-668-3400. Permission is required for enrollment during summer sections 43 and 44 and for fall section 41. (Not offered during summer section 42). Enrollment for other sections will be on a first come/first served basis effective summer 2021. Enrollment Max: 4. Credit: 4. *Cameron Taylor, MD, Elizabeth Malinzak, MD, Grace McCarthy, MD, and Staff.*

ANESTH-446C. Acute and Chronic Pain Management. Students will participate in both inpatient and outpatient pain management. Each student is assigned daily to an individual fellow or attending physician who supervises the student's active involvement. This involvement emphasizes a multidisciplinary approach appropriate for the individual patient. Topics reviewed include pharmacotherapy including opioid management, interventional procedures such as epidural and peripheral nerve catheter placement, nerve blocks, neurolytic procedures, as well as implantable devices. The benefits of physical and psychological therapy are stressed. Students will observe and/or participate in various interventional procedures. In addition to this clinical work, students attend weekly pain conference and grand rounds. The course is offered each elective period throughout the year. More than two absences must be made up, and if more than five absences are anticipated, the elective should be re-scheduled. Permission required to enroll. Students with questions may contact Dr. Lance Roy (lance.roy@duke.edu) or Teena Wyatt (teena.wyattl@duke.edu). Please contact Dr. Roy the week before the rotation for information about where to arrive on the first day. If your rotation assignment is at the Durham VA Medical Center, you will need to complete the required VA paperwork at least 30 days prior to the start of the rotation. For questions about the VA paperwork, please contact Erik Sandstrom (erik.sandstrom@va.gov). Credit: 4. Enrollment: max 2, min 1. *Lance Roy, MD and Arun Ganesh, MD*

Dermatology

Clinical Science Electives

DERMATOL-450C. Clinical Dermatology. The elective in clinical dermatology is designed to prepare students to perform an accurate skin examination, formulate a differential diagnosis, and choose appropriate therapeutic interventions. This course is valuable to any student interested in improving their ability and confidence in the cutaneous exam. Students spend two weeks working in the outpatient dermatology clinics, one week on the inpatient consult service at Duke, and one week at the Durham VA Medical Center. The outpatient clinical experience includes general dermatology clinics as well as a variety of specialty clinics such as pediatric dermatology, transplant dermatology, and procedural dermatology. Patient care is supplemented with modules designed to provide the student with a foundation in dermatologic principles, and students are encouraged to attend weekly departmental teaching conferences. Student evaluations are based on the development of clinical skills as assessed by faculty and residents. Students are to report to the Dermatology Clinic, VA medical center 8A clinic on 8:30 a.m. on the first day of the rotation for orientation. NOTE Duke students enrolled in DERMATOL 450C MUST HAVE VA COMPUTER ACCESS. Students are responsible for contacting Erik Sandstrom at erik.sansdstrom@va.gov no less than 60 days from the first day of the section in which they are enrolled. Drs. Caroline Rao and Daren Simkin are the course directors and may be reached at 681-3590 or by email. Secondary contact: Jessica Braddock, (jessica.braddock@duke.edu). Permission of the instructor is required for all summer sections and fall 41. Credit: 4. Enrollment: max. 3, except where otherwise indicated. Sole Enrollment. Students may not enroll in any other daytime courses while enrolled in this course. *Caroline Rao, MD, Erin Lesesky MD, Sabrina Shearer MD, Megan Jamison MD, Rabina Walsh, MD as well as other faculty*

Emergency Medicine

Sub-Internships

EMERGMED-401C. Emergency Medicine Subinternship. This sub-internship is designed for students with a career interest in emergency medicine. Students will hone their approach to the emergency medical patient, including essential diagnostic and therapeutic measures. The experience will encourage the development of skills important to the practice of emergency medicine including differential diagnosis, managing multiple patients, communicating with consultants, and making appropriate dispositions. Efforts are made to coordinate the majority of a student's shifts with a core group of faculty to provide mentorship. Students will attend weekly medical student lectures, Thursday morning resident conferences, and deliver a final case presentation. For more information, please contact Dr. Erin Leiman at 681-2820 or via email,

erin.leiman@duke.edu. Secondary Contact: Erin Browning (erin.browning@duke.edu). Prerequisites: Students must have already completed a prior emergency medicine rotation and permission of the instructor is required. Please try to contact the course director at least several weeks in advance of enrollment to help guarantee availability. First day meeting: 1:00 p.m. in the conference room located in the emergency services administrative suite above the emergency department. Credit: 5. max: variable. Offered in summer 43 only, summer 44 only, and all fall sections. *Erin Leiman, MD*

Clinical Science Electives

EMERGMED-405C. Emergency Medicine. The American College of Emergency Physicians defines emergency medicine as 'the medical specialty with the principal mission of evaluating, managing, treating and preventing unexpected illness and injury.' Course Goals: 1) Students will see patients with the full range of chief complaints that present to the Duke Hospital Emergency Department. 2) Students will gain experience in making initial evaluations as well as diagnostic and treatment plans with an emphasis on detecting and treating immediate life-threatening conditions. 3) Students' ability to rapidly obtain critical facets of a history and physical examination will improve. 4) Students will mature as clinical problem-solvers by seeing several patients per day with undifferentiated chief complaints. How Goals Are Achieved: 1) Students will work with attendings and residents during approximately 13 eight-hour shifts per month. A mixture of day, evening, and overnight shifts will be assigned that include both weekdays and weekends. 2) Medical student lectures will be held each week. 3) Students will attend resident conferences on Thursday mornings, 8am to 1pm. Methods of Evaluation: Attendings and residents will give feedback to students verbally and through shift evaluation cards. For more information, please contact Dr. Erin Leiman at 919-681-2820 or by email, erin.leiman@duke.edu. Secondary Contact: Erin Browning (erin.browning@duke.edu). Prerequisites: none. First day meeting: 1:00 p.m. in the conference room located in the emergency services administrative suite above the emergency department. Duke medical students must make sure that their VA credentials are active prior to the course as they may be assigned a shift at the Durham VA Medical Center. Credit: 4. Enrollment: max varies by term. *Erin Leiman, MD*

Medicine

Sub-Internships

MEDICINE-402C. Medical Sub-Internship in Hematology-Oncology. (1) Course Goals: This is an intensive experience in the care of inpatients with serious hematologic and oncologic disorders. The student learns to interpret peripheral blood films, how to use and interpret other specialized laboratory tests (e.g., bone marrow aspirate/biopsy, serum electrophoresis, coagulation studies, tumor markers, leukemia cell markers), and how to approach the evaluation and treatment of hematologic and solid tissue malignancies and their complications. (2) How Goals Are Achieved: Under supervision of a Hematology/Oncology fellow and a division staff

member, the student is given considerable responsibility in the care of inpatients on one of the Hematology/Oncology or Experimental Therapeutics wards in Duke Hospital. They receive instruction and guidance in performing diagnostic and therapeutic procedures and gain experience in the use of chemotherapeutic drug regimens. Specific issues such as quality of life, care of the aging patient with malignancy, and decisions regarding DNR status are addressed by the patient-care team. In addition, students receive a series of core lectures, receive training in chemotherapy, and attend the ongoing clinical, research and didactic divisional conferences. (3) Methods of Evaluation: Students are evaluated by their preceptors on the basis of their ability to obtain a history, perform a physical examination, evaluate hematologic and other laboratory data, and propose assessments and plans of action. For more information, please contact Nyasia Lloyd at 684-2287 or via email at nyasia.lloyd@duke.edu. Credit: 5. Enrollment: max 1. *Cristiana Costa Chase, MD and Medical Oncology staff*

MEDICINE-405C. Intensive Care Medicine Sub-Internship (Duke). Course Goals: (1) Primary - To introduce the student to a pathophysiologic approach to critically ill adults. Secondary - To provide an opportunity for students to perform selected procedures. (2) How Goals Are Achieved: Students function as sub-interns in a very active intensive care unit. Students perform patient evaluations, procedures, and develop diagnostic treatment plans under the direct supervision of the junior assistant resident, critical care fellow, and attending physician. Add Typical shifts are 6am to 6pm, six days a week with one weekend day off. Physiology and biochemistry based approach to critical care medicine is stressed. Emphasis is placed on bedside teaching with easy access to attending physicians and critical care fellows for the discussion of specific patient oriented questions. Preferences for the month of rotation are honored, if possible. Questions should be directed to Dr. Young, katherine.a.young@duke.edu. (3) Methods of Evaluation: Each student's performance is assessed by the course director through direct observation of the student in the clinical and didactic environments. Input from the residents, fellows, and other attending physicians is obtained, and provides the primary basis for grade assignment. IMPORTANT: Students may need to take care of COVID patients and need to be vaccinated for COVID in order to take the rotation. For more information, please contact Donna Permar at 681-5919 or via email at donna.permar@duke.edu. Permission of the Instructor is Required for Enrollment. Please contact Dr. Young for permission (katherine.a.young@duke.edu) Credit: 5. Enrollment: max 4. *Katie Young, MD and critical care staff*

MEDICINE-407C. Sub-Internship in Internal Medicine/Psychiatry. This course is an intensive clinical experience in the diagnosis and treatment of acute co-morbid medical and psychiatric disorders requiring inpatient hospitalization. Students participating in this four-week elective based in Duke Hospital are expected to function at intern-level, assuming care of a small census of complex patients. The Medicine/Psychiatry faculty on the GenMed 12 service provides direct supervision. The goal of the elective is to refine and then clinically apply basic knowledge from the fields of Internal Medicine and Psychiatry. Participation at selected case conferences and didactic sessions is expected. Students are invited to attend the intern lecture series during Psychiatry Academic Half-day and educational offerings in Internal Medicine, including Intern Report. For more information, please contact Dr. Kristen Shirey via email,

kristen.shirey@duke.edu; secondary contact: Cathy Lefebvre, cathy.lefebvre@duke.edu. Preference is given to students considering a career in combined Medicine-Psychiatry. Prerequisite: permission of instructor and successful completion of PSYCHTRY-205C and MEDICINE-205C. C-L PSYCHTRY 407C. Credit: 5. Enrollment: max 1. *Kristen Shirey, MD*

Clinical Science Electives

MEDICINE-415C. Clinical Management of Obesity. The unique blend of clinical and research programs related to obesity at Duke provides an opportunity for students to learn how to evaluate and manage obesity in many ways. This elective involves attendance in outpatient clinics or residential programs related to obesity or obesity-related co-morbidities including multidisciplinary outpatient programs (Lifestyle and Weight Management Center, Pediatric Healthy Lifestyles), residential programs (Structure House), Metabolic and Weight Loss Surgery, Adult and Pediatric Endocrinology, Cardiometabolic Clinic, Keto Medicine Clinic, Metabolic Dysfunction-Associated Fatty Liver Disease Clinic, and Sleep Disorders Center. Students will have the opportunity to observe and take part in clinical care as well as observe ongoing studies and attend lectures at various clinical and research conferences. In consultation with the course director, an independent project related to obesity will be completed. For more information, please contact Dr. Yancy at 919-491-8527 or via email at will.yancy@duke.edu. Credit: 4. Enrollment: 1. Faculty: *William Yancy, MD; Sarah Armstrong, MD; Amreen Dinani, MD; Dana Portenier, MD; Andrew Spector, MD; Eric Westman, MD.*

MEDICINE-423C. Rheumatology. (1) Course Goals: For students to learn the basics of the evaluation and management of patients with inflammatory and non-inflammatory arthritis, autoimmune and immunological disorders. Diseases seen include the various forms of arthritis and other inflammatory diseases such as lupus and other connective tissue diseases, vasculitis, scleroderma, and myositis. Students will also learn to interpret specialized laboratory studies relating to the evaluation of patients with rheumatic and immunological disorders. Students are exposed to joint aspiration and injection, synovial fluid analysis, musculoskeletal radiology, and histopathological analysis. (2) How Goals Are Achieved: Two weeks of the rotation are spent in the Duke Rheumatology faculty clinics located in Duke South Clinics and in our South Durham or Brier Creek (Raleigh) locations. Two weeks are spent as part of the rounding team on the Duke Hospital inpatient rheumatology consultation service. The inpatient consultation team includes an attending physician, a fellow, a student and possibly 1 resident. Students are expected to perform at least three new inpatient consultations each week. Rounds focus on oral presentation of patients including detailed review of history, physical examination findings, pertinent laboratory, x-ray and pathological findings. Students attend divisional conferences including weekly Rheumatology and Immunology Grand Rounds, Rheumatology Fellows Core Curriculum Conference, Journal Club, and Rheumatology/Radiology Conference. Students are expected to watch two introductory videos, one on the approach to the rheumatology patient and one on the rheumatologic musculoskeletal examination. Justification for a grade of honors includes the following: Evidence through direct observation of house officer-level clinical skills in rheumatology; evidence of timely completion of learning modules, demonstrated by 1) active participation in and preparation for weekly meetings and 2) completion of the log of learning points and questions; 3) attendance at conferences listed above; 4) evidence of additional reading through case presentations to faculty members; 5) faculty evaluations; 6) demonstration of

exemplary interest and effort during the rotation. Students are assigned primary house officer level responsibilities on the Consultation Service and the Outpatient Clinics at Duke South/South/Durham/Brier Creek. (3) Methods of Evaluation: Students are evaluated by the primary faculty and fellows with whom they work. Evaluations are based on students' performance on rounds and in the clinics, including history and physical examination skills and conference attendance. For more information, please contact Dr. Maheswaranathan (mithunan.maheswaranathan@duke.edu). Students may also contact Nyasia Lloyd (nyasia.lloyd@duke.edu). Credit: 4. Enrollment: max 1. *Mithu Maheswaranathan, MD; David Caldwell, MD; Philip Chu, MD; Megan Clowse, MD; Atul Kapila, MD; David Leverenz, MD; Jennifer Rogers, MD; Ankoor Shah, MD; William St. Clair, MD; Terri Tarrant, MD; Rebecca Sadun, MD; Kai Sun, MD; Sophia Weinmann, MD. Sole Enrollment*

MEDICINE-425C. Clinical Hematology. (1) Course Goals: Primary - To teach the clinical and laboratory approach to patients with a hemorrhagic or thrombotic disorders. The student learns to evaluate clinical coagulation disorders and become familiar with coagulation laboratory testing and interpretation. Secondary - To expose the student to recent advances in the area of coagulation research. (2) How Goals Are Achieved: The student spends four weeks on the Hematology Consult Service under the direction of hematology division faculty. The student is expected to work up inpatients with coagulation problems referred to the Coagulation Service as well as participate in a half day a week Coagulation Outpatient Clinic. Patients generally present with complex diagnostic as well as therapeutic problems. The rotation includes Coagulation lab rounds during which the student learns to interpret lab tests and review abnormal results. The student is expected to read standard texts regarding their patients' problems, as well as relevant reviews provided by the attending physician. The student may also interact with the Anticoagulation Management Service to gain a better understanding of various approaches to outpatient management of anticoagulant therapy. Students electing to do an eight-week rotation have a more extensive laboratory and clinic research experience. (3) Methods of Evaluation: The student's performance is evaluated by the hematology attending with input from the fellow and/or medicine resident on the service. The evaluation is based on observation of the student's ability to do careful histories and physical examinations, to appropriately assess the problem and develop a logical diagnostic and therapeutic plan, and to demonstrate an increase in knowledge regarding laboratory tests and their application to clinic problems. For more information, please call Nyasia Lloyd at 681-4510, or by email at nyasia.lloyd@duke.edu. Credit: 4. Enrollment: max 1. *Thomas Ortel, MD; and hematology staff*

MEDICINE-428C. Metabolism and Endocrinology. 1) Course Goals: Primary - The student has an in-depth experience in the evaluation and management of patients with endocrine disorders. Secondary - The student learns basic principles of hormone physiology and applies these concepts in clinical settings. (2) How Goals Are Achieved: Each student is introduced to patient problems by working with the Endocrine faculty. The student is exposed to clinical endocrine disorders by seeing patients in endocrine outpatient clinics (Diabetes/ General Endocrine, and Durham VA Medical Center General Endocrine Clinics), as well as experiencing the inpatient Diabetes Management/General Endocrine Consult Service. The student has the opportunity to review general literature on common endocrinologic conditions and endocrinologic emergencies, as well as learning basic assessment skills of the patient with diabetes, thyroid disease, and other common endocrinologic presentations. Division conferences

include Grand Rounds, Case Conference, and Inpatient Consult Rounds with opportunities to integrate basic concepts with clinical applications. (3) Methods of Evaluation: A written critique is provided by the student's preceptors with comments from other members of the division as appropriate. For more information, including where to report on the first day of classes, please contact via email Dr. Beatrice Hong, beatrice.hong@duke.edu. Secondary contact: Dr. Spratt (susan.spratt@duke.edu). Credit: 4. Enrollment: max 2. *Beatrice Hong, MD, Susan Spratt, MD and endocrinology staff*

MEDICINE-430C. Pulmonary Medicine. Pulmonary Medicine. (1) Course Goals: Primary - To provide training in clinical aspects of pulmonary medicine. The primary diseases emphasized include asthma, chronic obstructive lung disease, pulmonary vascular diseases including pulmonary embolus, acute respiratory failure, hypersensitivity, interstitial and immunologic lung diseases and pulmonary manifestations of systemic illnesses, i.e., sarcoid, scleroderma, cystic fibrosis, etc. Secondary - To provide experience with pulmonary laboratory techniques including pulmonary function testing, cardio-pulmonary exercise testing, chest radiology, and bronchoscopy. (2) How Goals Are Achieved: Students are assigned to the Pulmonary Inpatient and Consult Services at Duke Hospital. They have primary responsibility for workup and presentation of selected patients on these services. All patients are presented and followed at daily rounds with fellows and faculty. Students are expected to attend the following conferences at Duke Hospital during their rotation unless clinical duties supersede: Tuesday Fellows Lecture series, Wednesday Chest Conference; and Thursday ILD conference. Students are otherwise encouraged to attend General Medicine Noon Conferences. (3) Methods of Evaluation: Formative feedback: It is expected that students seek out personalized feedback at least weekly to bi-monthly with both the fellow and faculty on the rotation. Also, students will take a pre and post-test (20 questions) on Pulmonary Medicine. This will be strictly for self-assessment and will not be factored into their final grade. Summative feedback: Student summative evaluations are done by fellows and faculty assigned to the Consult Services during the period of the course and is based on observed performance in regards to patient presentations, participation during rounds, and oral presentations on self-selected pulmonary topics Questions should be directed to Tina Van Nevel, via email at tinavannevel@duke.edu or by phone at 919-684-0435. Dr. Marshall can be reached via email at Harvey.marshall@duke.edu. Credit: 4. Enrollment: min 1, max 1. *Harvey Marshall, MD and pulmonary staff*

MEDICINE-431C. Adult Allergy and Clinical Immunology. Enrollment Requisite: Students must contact Dr. Lugar prior to enrolling in the course. The adult allergy and clinical immunology elective consists of direct patient care, didactic sessions, independent readings and hands-on training of various clinical and laboratory test modalities that are used in clinical practice. This elective will provide exposure to patients with various allergic and immunologic disorders including allergic rhinitis, sinusitis, asthma, hypersensitivity pneumonitis, allergic conjunctivitis, diseases associated with autoimmunity, immuno-deficiencies and allergic skin diseases. Additionally, the student will obtain hands-on practice with allergy skin testing as well as conducting other immunology labs. The schedule and content can be individualized on the basis of the student's needs and goals. Students must contact the course instructor, Dr. Patricia Lugar, patricia.lugar@duke.edu, to arrange meeting location. Secondary contact: Jason Bullock at 919-613-5707. Credit: 4. Enrollment max: 1. *Patricia Lugar, MD*

MEDICINE-434C. Outpatient Hematology-Oncology (Duke or Durham VA). (1) Course Goals: To give the student experience in the diagnosis, long-term treatment, and supportive care of patients with hematologic and oncologic disorders in the outpatient setting. The use and interpretation of peripheral blood films and other specialized laboratory tests (e.g., bone marrow aspirate/biopsy, serum electrophoresis, coagulation studies, tumor markers, leukemia cell markers), as well as an approach to the evaluation and treatment of common hematologic problems (anemias, bleeding and clotting disorders, hematologic and solid tissue malignancies) are included. Issues such as quality of life and care of the geriatric oncology patient are addressed. (2) How Goals Are Achieved: The student is assigned a staff member as preceptor with whom to work in the Hematology/Oncology clinic one to three half- days per week in clinic, depending on the student's schedule and the availability of physicians in clinic. Alternatively, the student may work with several preceptors in the Hematology/Oncology clinic for five full days per week during a four-week block. If desired, preceptors who concentrate mainly on hematology or oncology may be arranged. 3) Methods of Evaluation: Students are evaluated by their preceptors on the basis of their ability to obtain a history, perform a physical examination, evaluate hematologic and other laboratory data, and propose assessments and plans of action. NOTE: Students cannot drop the course 2 weeks prior to the course start date. For more information, please call Nyasia Lloyd at 684-2287 or via email, nyasia.lloyd@duke.edu. Credit: 4. Enrollment: max 1. *Matthew Labriola, MD, and Hematology, Medical Oncology and Cell Therapy staff*

MEDICINE-435C. Gastroenterology. (1) Course Goals: Primary - To provide an experience from which the student can develop a fundamental approach to the diagnosis and management of digestive diseases. (2). Goals Are Achieved: Through participation in the care of patients under the guidance of the fellows and faculty on the GI Consult Services (Duke Hospital), Liver Service (Duke), Biliary Service (Duke), VA Hospital GI consults and Outpatient GI Clinics. (3) Methods of Evaluation: Evaluations are completed by the course director, attendings, and fellows working with the student and include assessment of clinical skills, fund of medical knowledge, and the ability to apply this knowledge to the care of patients. Course meets at 8:00 am, Monday through Friday. No holiday or weekend coverage for students. Prior to the start of rotations, students will receive an email detailing their specific schedule, assigned supervising fellow and meeting location. For more information, please contact Ashley McPherson at 684-2819 or via email at ashley.mcpherson@duke.edu. Credit: 4. Enrollment: max 2. *Cecelia Zhang, MD and GI department staff*

MEDICINE-438C. Hematology and Oncology Consults (Durham VA). (1) Course Goals: Students learn how to interpret peripheral blood films, how to use and interpret other specialized laboratory tests (e.g., bone marrow aspirate/biopsy, serum electrophoresis, coagulation studies, tumor markers, leukemia cell markers), and how to approach the evaluation and treatment of common hematologic problems (anemias, bleeding and clotting disorders, hematologic and solid tissue malignancies). (2) How Goals Are Achieved: Students receive a series of core lectures, gain familiarity with chemotherapy regimens and administration, and attend the ongoing clinical, research, and didactic divisional conferences. Clinical duties include the performance of inpatient consults under the supervision of a fellow and staff member. This course may be taken for four or eight weeks. (3) Methods of Evaluation: The students are expected to perform and present initial evaluations of consult cases including peripheral blood

film on daily rounds, and to perform limited literature searches and evaluations of chosen clinical topics. For more information, please contact Nyasia Lloyd at 684-2287 or via email at nyasia.lloyd@duke.edu. Credit: 4. Enrollment: max 2. *Matthew Labriola, MD and hematology/oncology staff*

MEDICINE-440C. Clinical Infectious Diseases. The objectives of this course are learning principles in Infectious Diseases and Antibiotic Stewardship and will be specifically achieved through the consult service cases and teaching by the Infectious Disease Fellows and Attendings. The students will be able to work-up and present cases to Fellows and Faculty and attend multiple conferences that occur each week (Journal Clubs, Grand Rounds and Case Conferences). The basic principles of Infection Management and Antibiotic Stewardship will be taught by Fellow and/or Attending Physician and this education should provide a platform to utilize during house officer training and care in most medical and surgical specialties. The teaching methods will be: case presentations, rounding daily on the Infectious Diseases Service, Didactic teaching sessions on core topic areas in Infectious Diseases, attending Clinical Microbiology Rounds, and attending Infectious Diseases Conferences. This course strives to allow the student to appreciate the clinical 'thought processes and principles around diagnosis and management of Infectious Diseases'. Grading criteria are subjective and the direct responsibility of the individual attending physician on the service. There are no objective tests to support the grade. The student is encouraged to be involved and attempt to learn as much as possible. This enthusiasm for learning is the expectation of Fellows and Faculty for the student. The feedback for students may be gathered by direct interaction with the attending physician. NOTE: This elective may require students to complete some rotations at the VA Medical Center. Please note that you must complete the required VA paperwork no later than 30 days from the 1st day of your scheduled class in order to participate. Paperwork should be obtained from the course director or their designated staff. Permission of the Instructor is required for enrollment. Meeting Location 1st day: Workroom 6W70 in DMP. For more information and/or to obtain a permission number, please contact Haley Sullivan, haley.riddle@duke.edu. Credit: 4. Enrollment max. 4. *Micah McClain, MD/PhD*

MEDICINE-442C. Clinical Arrhythmia Service. Clinical Arrhythmia Service. (1) Course Goals: Primary - To provide students with an in-depth exposure to the diagnosis and management of cardiac arrhythmias, electrophysiologic studies, ablation of arrhythmias, cardiac pacemakers, and implantable defibrillators; to help students to understand the electrophysiologic events that result in arrhythmias and ECG changes. Special emphasis will be placed on ECG interpretation. This course is not designed to be a substitute for the general cardiology elective (MEDICINE 404C and 445C). Secondary - To familiarize the student with certain basic techniques of arrhythmia diagnosis; (2) How Goals Are Achieved: The student spends four weeks working on the Clinical Arrhythmia Service. The student makes rounds on the inpatient Clinical Electrophysiology Service on patients with arrhythmias. The student is encouraged to attend electrophysiologic studies and assist in the analysis of data from these studies. Attendance at electrophysiologic surgical procedures is also encouraged. The student is responsible for the work-up of patients admitted to the Arrhythmia Service as well as inpatient consults and plays an important role in the follow-up of these patients while they are in the hospital. The student may elect to see outpatients during Arrhythmia Clinics that meet on Monday, Tuesday, Wednesday, and Thursday in the PDC (Duke Clinic). The student assists in the evaluation of patients for

permanent pacemaker and defibrillator implantation. Students are responsible for reviewing the literature on subjects related to the patients that they have seen on the clinical service. Didactic conferences are given on Monday and Wednesday mornings; (3) Methods of Evaluation: Students are evaluated on their clinical skills in taking histories, performing physical examinations interpretation of the ECG as well as in their assessment and presentation of the patient's problem to the attending physicians. They are encouraged to present at least one patient each day. They are also assessed on their ability to read and understand the relevant literature and their ability to assume a responsible role in the care of patients on the Clinical Arrhythmia Service. Students should meet at Conference Room 7451A Duke North Hospital at 7:30 a.m. and page Dr. Grant (970-6656) if he is not there shortly after 7:30 a.m. STUDENTS MUST CHECK IN WITH DR. GRANT OR HE WILL NOT BE ABLE TO COMPLETE THE GRADE EVALUATION FOR THE COURSE. For more information, please email Dr. Grant at grant007@mc.duke.edu. Secondary Contact: Mitzi Scarlett, 919-681-3518. Credit: 4. Enrollment: max 1. Augustus O Grant. Enrollment: max 1. *Augustus Grant, M.B., CH.B., PhD; Tristram Bahnson, MD; and Sana Al-Khatib, MD/MHS*

MEDICINE-444C. Clinical Heart Failure and Cardiac Transplantation. This course is designed to allow the student to gain a broad experience in the fields of heart failure and cardiac transplantation. The student will participate in both inpatient rounds and outpatient clinics. There will also be an opportunity to participate in the surgical management of heart failure including the use of mechanical circulatory support devices, high-risk palliative cardiac surgical procedures and cardiac transplantation. The learning objectives of the course are supplemented by multidisciplinary rounds, cardiac transplant listing conference and cardiac pathology rounds. For more information, please contact Dr. Agarwal at richa.agarwal@duke.edu, or by phone, 919-684-3854. Secondary Contact: Patti Gentry, patti.gentry@duke.edu, or 919-684-3854. Credit: 4. Enrollment: max 2. *Richa Agarwal, MD and other Heart Failure Faculty*

MEDICINE-445C. Consultative Cardiology. (1) Course Goals: Primary - To refine and further develop the skills necessary for eliciting an accurate, complete CV history and for performing an accurate, complete CV physical examination: To refine student understanding of normal and pathologic cardiovascular physiology while functioning in the role of a consultant for inpatients and outpatients with various cardiovascular problems; Secondary - to develop the skills necessary to quickly and accurately interpret ECGs (both 12-lead ECGs and rhythm strips). (2) How Goals Are Achieved: Students are assigned to the consult service at either the Durham VA Center or Duke, where, in concert with the resident, fellow and senior staff attending, they evaluate the operative risk for cardiac and non-cardiac surgery as well as make decisions concerning the evaluation and treatment of patients with a wide variety of heart diseases. Students participate in reading ECGs and a core curriculum experience including individually assigned times to work with HARVEY, the cardiology patient simulator, and various computer assisted instruction programs. (3) Methods of Evaluation: Students are evaluated by the resident, fellow, and senior staff with whom they work. The evaluation form is made available at the beginning of the elective. Depending on circumstances, students may also be evaluated by written and practical examinations at the beginning and/or end of the elective. NOTE: Students enrolled in this course may be required to complete their rotation at the DVAMC. The required paperwork for the DVAMC must be completed at least 30 days prior to the first day of classes for the section/term the student is enrolled. Contact the department to obtain required paperwork.

For more information, please contact Dawne Smith, 668-1524 or via email at dawne.t.smith@duke.edu. Prerequisite: none. Credit: 4. Enrollment: max. 5, (unless otherwise noted). *Nishant Shah, MD; and cardiology staff*

MEDICINE-446C. Nephrology. (1) Course Goals: Primary: To provide clinical experience in the diagnosis and treatment of patients with kidney diseases, fluid and electrolyte disorders, and hypertension. Secondary: To integrate physiology, immunology, pathology, and biochemistry into the evaluation and management of patients with renal disease. (2) How Goals Are Achieved: The students are integrated into the patient care team consisting of attending physician, nephrology fellows, and medical residents. They will participate in both inpatient and outpatient care of patients with a wide range of kidney diseases, fluid and electrolyte problems, and difficult to manage hypertension. Students will round on three major nephrology services: the Acute ICU Service which cares balanced exposure to all facets of nephrology including patients in the intensive care units at Duke, the Transplant Service which focuses on patients with kidney or combined kidney-pancreas transplants, and the Acute Floor Service which provides care to patient with acute kidney injury, acid base and electrolyte disturbances. The student participates in work rounds with the residents and fellows each day, daily rounds with the attending physician, and weekly nephrology conferences. These conferences include Journal Club where the latest clinical and basic science literature is reviewed, the weekly Nephrology Didactic Lecture Series focusing on pathophysiological principles of clinical nephrology, and Grand Rounds encompassing Pathology Conference, Clinical Case Conference, and seminars by fellows, faculty and/or visiting professors. This combination of broad-based clinical experience, coupled with formal didactics, provides the student with a comprehensive educational opportunity. (3) Methods of Evaluation: Written evaluation from faculty preceptor. For more information, please contact Dr. Shweta Punj via email at shweta.punj@duke.edu or by phone at 681-2298. Students should meet on the first day at Duke Hospital, Dialysis Unit, 7th floor near 7900. Unit phone: 681-7800. Please meet promptly at 8:00 a.m. Acute Fellow page: 970-7746. Credit: 4. Enrollment: max 4. *Shweta Punj, MD, and nephrology staff*

MEDICINE-449C. Geriatric Medicine. 1) Course Goals: Primary - To enable the student to become familiar with the principles of caring for the geriatric patient. Secondary - To familiarize the student with the physiology and diseases of aging. (2) How Goals Are Achieved: This elective is offered by the interdisciplinary faculty of the Division of Geriatric Medicine. The student works with faculty, fellows, advanced practice providers and house staff in a number of settings involved in the care of the geriatric patient. These include the Geriatric Evaluation and Treatment Clinic (Duke), Geriatrics Consultation Service (Duke University Hospital and Duke Regional Hospital), The Forest at Duke Clinic, Community Living Center (Durham VA Medical Center) and other subspecialty clinics. Principles to be stressed are biology and pathophysiology of aging, multiple clinical problems in the elderly, interdisciplinary team approach to evaluation, planning and treatment, goals of maximal functional achievement and independence for the elderly. Specific clinical problems that students encounter include dementia, delirium, polypharmacy, gait instability and falls, urinary incontinence, pressure sores, and chronic pain. The student participates actively in the work-up and management of patients inpatient extended care and outpatient settings. Familiarity with the growing literature in geriatric medicine is encouraged. The student participates in seminars, lectures and team meetings at the appropriate sites. (3) Methods of Evaluation: Evaluation is by consensus of instructors and fellows at the

various training sites and the papers submitted during the rotation and at the conclusion of the rotation. It is based on discussions and presentations throughout the course period. If students are registering for the course within 15 days of starting the rotation, they must contact Dr. Serena Wong at serena.wong@duke.edu to notify them of their late registration and request permission to enroll. Permission will be based upon availability of clinical experiences for the team identified. No students will be accepted for registration after 4PM on the Wednesday before a Monday rotation start. As noted above, students registering within 15 days of the rotation start are expected to contact Dr. Wong immediately to notify them and request permission. Prerequisite: Successful completion of first and second year of medical school. NOTE: Students taking this course may be required to complete rotations at the Durham VA Medical Center. Please contact the department to obtain the required paperwork. Paperwork must be completed 30 days prior to the first day of the section in which the student is enrolled. Students that have not completed the paperwork will not be allowed to work at the Durham VA Medical Center. Primary contact: Dr. Serena Wong (serena.wong@duke.edu) Secondary contact: Dr. Liza Genao, (liza.genao@duke.edu). Credit: 4. Enrollment: max 2. *Serena Wong, DO; and Liza Genao, MD and other staff*

Neurosurgery

Sub-Internships

NEUROSUR-401C. Sub-Internship in Neurological Surgery. This course is designed for those students with a career interest in neurological surgery. Duties include the work-up and care of inpatients, evaluation of clinic patients, assistance in the operating room, daily rounds, and approximately every 4th-night call. Students will be expected to assume intern-level responsibilities. Students round with the neurosurgical team in the mornings then participate in the OR, or attend one of the neurosurgery clinics after rounds. Students attend the Wednesday academic day neurosurgical conferences covering topics within neurosurgery, neurology, neuropathology and neuroradiology, as well as twice monthly Brain School conferences. For more information, please contact Sherolyn Patterson at 684-3053 or contact her via email, sherolyn.patterson@duke.edu. First Day of Classes: Students are to meet the residents in the neurosurgery work room at 5:45 AM in 8th floor conference room 8A90 of Duke Central Tower (DCT). Credit: 5. Enrollment max: 5. *Steven Cook, MD; Gerald Grant, MD (Chairman), Muhammad Abd-El-Barr, MD, PhD; Deb Bhowmick, MD; Allan Friedman, MD; John Barr, MD; Alexa Bramall, MD, PhD; Patrick Codd, MD; Andrew Cutler, MD; Peter Fecci, MD, PhD; Herbert Fuchs, MD, PhD; Rory Goodwin, MD, PhD; Oren Gottfried, MD; David Hasan, MD; Stephen Harward, MD, PhD; Erik Hauck, MD; Jordan Komisarow, MD; Nandan Lad, MD, PhD; Anoop Patel, MD; John Sampson, MD,PhD; Christopher Shaffrey, MD; Brandon Smith, MD; Derek Southwell, MD,PhD; Khoi Than, MD; Dennis Turner, MD; Matthew Vestal, MD; and Ali Zomorodi, MD*

Obstetrics and Gynecology

Sub-Internships

OBGYN-405C. Gynecologic Cancer Sub-Internship. This course presents a clinical experience in the management of patients with a gynecologic malignancy. This will include operating room, inpatient unit and clinic experiences. The student assumes the role of a sub-intern. Outpatient, inpatient, and operative exposure to these patients is extensive. The student should report to the 6300 workroom at 6:00am on their first day. Credit: 5 Enrollment: max 1. *Emma Rossi, MD; Andrew Berchuck, MD; Laura Havrilesky, MD; Haley Moss MD, Angeles Alvarez Secord, MD; Emma Rossi MD; Georgia Smith; and gynecologic oncology fellows*

OBGYN-407C. Urogynecology and Reconstructive Pelvic Surgery Sub-Internship. For students preparing for obstetrics and gynecology, general practice, surgery, and urology. Emphasis is placed on the outpatient assessment and inpatient or ambulatory management of patients with acute and chronic Urogynecologic disorders including pelvic floor dysfunction, pelvic organ prolapse, urinary and fecal incontinence, and others. Students have the opportunity to work closely with faculty members in the Division of Urogynecology. Participation in the operative care of Urogynecologic patients is desired. Time for independent study is planned. The student is expected to utilize this time to review and present a specific clinical problem with frequent guidance and input from a member of the Uroynecology Division with similar interests. NOTE: Fall section 42 is generally impacted by broad division absence during one week due to a national academic meeting. Students enrolling then will be provided with other learning opportunities. Contact: Alison.weidner@duke.edu. Enrollment Max. 1; Credit: 5. Prior to the first day, the student should contact Gail McFarland, Duke Urogynecology, 5324 McFarland Drive, Suite 310, Duke Medicine Patterson Place, Durham, NC 27707; Phone: 919-401-1006. Students will be provided with orientation information and connected with the supervising resident physician prior to first day of the rotation. Faculty*: Alison Weidner, MD/MMCi; Cindy Amundsen, MD; Matthew Barber, MD/MHS; Amie Kawasaki, MD; Cassandra Kisby MD; J. Eric Jelovsek, MD/MMEd/MSDS; Nazema Siddiqui, MD/MHSc; Anthony Visco, MD; and urogynecology fellows.*

OBGYN-409C. Benign Gynecology Subinternship. For students preparing for obstetrics and gynecology, general practice, and surgery. Emphasis is placed on the surgical management and inpatient care patients with acute and chronic gynecologic disorders including abnormal uterine bleeding, dysmenorrhea, myomas, endometriosis, and others as well as the outpatient evaluation of these disorders. Students will work closely with faculty members in the Division of Community and Population health. Participation in the preoperative, surgical, and post-operative management of GYN patients is another critical aspect of the rotation (including emergent gynecologic care). The student will also have their own continuity GYN clinic once a week, where they will have assigned patients to see, evaluate and formulate plans for (with supervision). Students will also take call with the GYN team, during which they will cover inpatient services, emergency room and consult pager as well as participate in urgent / emergent GYN cases. Students will round with the team daily on the inpatient GYN service as well. Credit: 5. Enrollment: max 1. *Nicole Kerner, MD; Beverly Gray, MD; Liz Deans, MD; Jill Hagey, MD; Mark Lachiewicz, MD; Lisa Muasher, MD; Newton Pleasant, Jr., MD; Jonas*

Swartz, MD; Vanisha Wilson, MD; and Megan J. Huchko, MD/MPH. Contact: Nicole.kerner@duke.edu Contact: Nicole.kerner@duke.edu

OBGYN-447C. Maternal-Fetal Medicine Sub-Internship. This course is for students preparing for general practice of medicine, pediatrics, or obstetrics and gynecology. This course studies the relationship of clinical factors during pregnancy, labor, and delivery. Emphasis is placed on abnormal conditions of pregnancy as related to the infant. Current problems in the maternal-fetal relationship are outlined. The student functions on an intern level and takes part in activities of the house staff and faculty in the inpatient and outpatient arenas. Opportunities for experience in prenatal ultrasound, diagnosis and genetic counseling available. Meet on the 5th floor of Duke Hospital, L&D workroom at 7:00AM on the rotation's first day (rounds begin at 7:10AM). Permission is required in order to enroll. Please contact Sarah Wright, sarah.e.wright@duke.edu. For more information, please contact Dr. Anne Honart at anne.honart@duke.edu. Secondary Contact: Sarah Wright (sarah.e.wright@duke.edu). Credit: 5. Enrollment: max 2. *Dr. Anne West Honart, MD and Brenna Hughes, MD*

Clinical Science Electives

OBGYN-408C. Minimally Invasive Gynecologic Surgery. For students preparing for obstetrics and gynecology, general practice, and surgery. Emphasis is placed on the outpatient assessment and inpatient or ambulatory management of patients with acute and chronic gynecologic disorders including menorrhagia, dysmenorrhea, myomas, endometriosis, and others. Students have the opportunity to work closely with faculty members in the Division of Minimally Invasive Gynecology (MIGS). Participation in the preoperative, surgical, and post-operative management of MIGS patients is another critical aspect of the rotation. Time for independent study is planned. The student is expected to utilize this time to review and present a specific clinical problem with frequent guidance and input from a member of the MIGS Division with similar interests. Credit: 4. Enrollment: max 1. Arleen Song, MD; Amy Broach, MD; and Craig Sobolewski, MD. Contact: *Arleen.song*@duke.edu

Ophthalmology

Clinical Science Electives

OPHTHAL-422C. General Ophthalmology. A clinical preceptorship in which the student participates and observes the regular house staff activities including night call, conferences, lectures, patient care, and treatment including surgery. The use of specialized ophthalmic apparatus is emphasized. Students should report to the 2nd floor lobby of the Duke Eye Center, Hudson Building @ 8:30am to see the Medical Student Coordinator. Credit: 4. Enrollment: max 4. *Jullia Rosdahl, MD/PhD*

Orthopaedics

Sub-Internships

ORTHO-429C. Sub-Internship in Orthopaedic Surgery. A full educational experience in orthopaedic surgery with duties and responsibilities similar to a first year resident. Students will have the opportunity to rotate through various orthopaedic subspecialties including trauma, joint arthroplasty, sports medicine, and foot and ankle. Inpatient care, outpatient examination, operating room experience, and emergency room call are expected. Individual or group discussions are conducted each day with attending staff/residents. Conference attendance and emergency room call are required. For more information and to obtain a permission number, please contact Wendy Thompson at wendy.thompson@duke.edu or 684-3170. NOTE: This course requires that students complete one week of rotations at the VA Medical Center. Students must complete the required paperwork no later than 30 days prior to the first day of the section in which they are enrolled. Failure to do so may result in the student not being eligible to participate in the elective or sub-internship experience. Permission is required. Credit: 5. Enrollment: max 4 for 4 weeks. Summer section 41, maximum of 2 students. Interested visiting medical students must contact the Visiting Student Coordinator, scott.campbell@duke.edu, to inquire about the process for applying. *Kendall Bradley, MD; Robert Fitch, MD and orthopaedic staff and house staff*

Otolaryngology

Sub-Internships

OTOLARYN-401C. Sub-Internship in Otolaryngology Head and Neck Surgery. This course is a full educational experience in OHNS with duties and responsibilities similar to a first-year resident. Students will experience a comprehensive survey of clinical activities, including inpatient care, assisting in the operating room, seeing consults, and emergency room call. The student participates in ward rounds and in various conferences held by the department. At the end of the subinternship, the student will give a 20 to 30-minute presentation on the topic of his/her choice at our departmental Grand Rounds Conference (usually based on a patient the student has encountered during the subinternship). For more information on where to report or basic questions, please refer to the OHN consult pager, 970-1320. Credits: 5. Enrollment max: 2. *Janet Lee, MD*

Pathology

Clinical Science Electives

PATHOL-402C. Primer of Clinical Pathology. This is a four-week elective rotation with 1-week in each of the following disciplines of clinical pathology: transfusion medicine, molecular pathology, microbiology, and hematology/hematopathology. Students pursuing a career in pathology or desiring a greater fund of knowledge in laboratory medicine for their clinical practice are well suited for this offering. Course Requisite: Permission of the instructor is

required for enrollment. Maximum Enrollment: 1 (Note: if the course is full, please feel free to contact Dr. Bandarenko. It may be possible that up to 1 additional student may be enrolled by advanced arrangement with, and approval of the course director. Students must contact the course director at least two weeks prior to the start of class for the section that they want to enroll in, if they wish to make schedule changes. Credit: 4. *Nicholas Bandarenko, MD; Eric Carlsen, MD, PhD; Maureane Hoffman, MD, PhD; Nancy Henshaw, MPH, PhD, D(ABMM), Grace Lee, MD; Jessica Poisson, MD; Jadee Neff, MD; and Christine Sulym BS, CG(ASCP)*

PATHOL-423C. Autopsy Pathology. The course is intended to introduce students to the autopsy as an investigative tool. Anatomic-clinical correlation is emphasized. Students work directly with one or more members of the pathology department. They first view autopsies and then assist in the performance of autopsies under supervision. They work up these cases with particular attention to correlations with clinical and experimental medicine, help prepare the final autopsy reports, and work essentially at the level of a house officer. Students are expected to write up one full autopsy report for an autopsy they participated in as their final project. For more information, please contact: Meridith Hennessey, M.H.S., meridith.hennessey@duke.edu. Credit: 4. Enrollment: max 2. *Carolyn Glass, MD*

PATHOL-448C. Practical Surgical and Cytopathology. This course is intended as an introduction to the practice of diagnostic surgical pathology. Clinical and morphologic aspects of diseases are emphasized in rotations through the different specialty services (Gastrointestinal, Gynecologic, Hematopathology, Neuropathology, Dermatopathology, etc.) Students will participate (with residents and staff) in evaluating surgical specimens, performing microscopic interpretations (with ancillary studies), and preparing the final report. The course can be tailored to individuals planning a career in pathology or those pursuing other specialties. Rotations through the Fine Needle Aspiration and Exfoliative Cytology services can be scheduled depending on the student's interest. Please contact Dr. Rami Al-Rohil at least two weeks prior to starting the rotation at rami.alrohil@duke.edu. Secondary contact (staff assistant): Maranda Oliver (maranda.oliver@duke.edu). Students meet on the first day in the pathology department at 9:00 a.m. Credits: 4. Enrollment: max 2. *Rami Al-Rohil, MBBS and staff*

Pediatrics

Clinical Science Electives

PEDS-402C. Pediatric Gastroenterology. This course offers an excellent clinical and endoscopic exposure in the field of pediatric gastroenterology with significant opportunity for one to one interaction with the pediatric GI faculty. The students spend majority of the time in the outpatient setting and the interested student will be exposed to the inpatient setting. For more information, please call Dr. Venkat 9196658017 or Ms. Lesley Stanford at 919-668-4390 for questions. Please report to Children's Health Center, 3rd Floor, GI clinic at Duke University Hospital (2301 Erwin Road, Durham, NC 27710) at 9 AM on the start day of the rotation where you will be given orientation and clinic schedule. Credit: 4. Enrollment max: 1. Note: Students that have previously taken the two-week selective, PEDS 228C, are not eligible to enroll in PEDS 402C. *Narayanan Venkatasubramani, MD/MRCPH/ MBBS; Richard Noel, MD/PhD*

PEDS-411C. Pediatric Emergency Medicine. The 4th year elective in Pediatric Emergency Medicine is designed to enhance the medical student's learning by allowing the student to develop a proficient and rational approach to the sick pediatric patient. The student will become familiar with the rapid assessment of ill patients and the development of a knowledge base and technical skills allowing for the management of pediatric emergencies. Also, the student will learn how to prioritize patient care, to recognize patients requiring emergent interventions, and to decide which patients need admission or outpatient care. By the end of the rotation, the student will be capable of (1) obtaining an appropriate problem-oriented history and physical, (2) creating a differential diagnosis based on available information, and (3) developing an appropriate management plan. Students will be contacted by Dr. O'Brian via email 1-to-2 weeks prior to the start date of their rotation with orientation materials. Prompt reply to this email is expected as time-sensitive information will be included. Students are to report to the Pediatric Emergency Department at Duke University Medical Center no later than the time of his/her first scheduled shift. Students will be expected to work four 8-hour shifts per credit. If scheduled, students are expected to attend any required didactic sessions/activities during the entire 4-week block. Required activities may include simulation and didactic lectures on various mornings (depending on the specific month). Requests to drop the course must be approved at least FOUR weeks prior to the start of the scheduled rotation. Failure to do so may result in a failing grade for the course. Please contact Dr. Rachel O'Brian, (course director), for questions. NOTE: It is sometimes possible that the course director may be able to accommodate an additional student for any single term. If the course is shown as 'full' in DukeHub and you are interested, you are encouraged to contact Dr. O'Brian (rao15@duke.edu) to inquire. Variable Credit: 4 credits. Enrollment max: 2. *Rachel O'Brian, MD; W. Clay Bordley, MD, MPH; Kyle Cecil, MD; Corrie Chumpitazi, MD, MS; Beth D'Amico, MD; Jennifer Dunnick, MD, MPH; James Fox, MD; Emily Greenwald, MD; Mia Mallory, MD, MEd; Emily Sterrett, MD, MS-CTR; Neel Subramanian, MD; and Larissa Truschel, MD, MPH*

PEDS-413C. Pediatric Pulmonary and Sleep Medicine. This course provides three to four weeks of experience in the evaluation, diagnosis, management of patients with respiratory and sleep related problems. Students will work closely with the pediatric pulmonary team both in the clinic and the inpatient services. Students will have the opportunity to provide the initial assessment and management plans for patients referred for pulmonary or sleep problems. For more information or questions, please contact Tarig Ali Dinar, (tarig.alidinar@duke.edu). Pre-requisite: Permission of the instructor is required for enrollment. Credit: 3-4; Maximum Enrollment: 1. *Tarig Ali Dinar, MD; Mai ElMallah, MD; Jason Lang, MD; Shatha Yousef, MD; and faculty in the Division of Pulmonary and Sleep Medicine*

PEDS-417C. Pediatric Subspecialty Elective. This 3 or 4-week course providing medical students with exposure to three or four subspecialties in pediatrics. Students would spend 1 week each in Pediatric Endocrinology, Child Abuse, Rheumatology, and Genetics. No more than 1 week in each subspecialty will be possible in this course. Reflective summary will be required at the conclusion of the course. This course will be graded Credit vs No Credit. Course Requisite: Permission of course director is required for enrollment. Please reach out to Robert Benjamin, course director if interested. His email is robert.benjamin@duke.edu . Students that take Peds 416C are not eligible to take Peds 417C. Three weeks/three subspecialties = 3 credits; Four

weeks/four subspecialties = 4 credits. Maximum Enrollment: 2; Credit: 4. *Robert Benjamin, MD; Marie McDonald, MD; Aditee Narayan, MD; and Heather Van Mater, MD*

PEDS-421C. Pediatric Infectious Diseases - Comprehensive. This course provides three to four weeks of experience in the evaluation, diagnosis, differential diagnosis, management, and follow-up of patients with potential infectious diseases. Students will work closely with the infectious diseases team on the general infectious diseases service, especially the fellow and attendings on both the inpatient service and in clinic. They will have the opportunity to provide the initial assessment and management plans for patients referred to pediatric infectious diseases. There may be an opportunity to spend some time with the transplant-immuno-compromised host infectious diseases team, also. Students that take this course are not eligible to enroll in PEDS 420C. For more information, please contact Dr. Kammy McGann (Kathleen.mcgann@duke.edu). Secondary contact: Dr. Mike Smith (michael.j.smith@duke.edu ; office phone: 919-684-6335). Students should meet on the first day at Dr. McGann's Office – Room 373, Hanes House (please email Dr. McGann one week before for the time of orientation and materials). Peds ID fellow pager: 970-7420. Permission is required. Credit: 4. Enrollment Max: 3 (including 420C and selective students). *Kammy McGann, M.D. and division faculty*

PEDS-425C. Endocrine Disorders in Children. Students participate in the Pediatric Endocrine, Diabetes, Lipid, Gender and Insulin Resistance/Obesity Clinics and assume active roles in the evaluation and management of in-patient consultations and of in-patients admitted to the Endocrine Service. Emphasis is placed upon the evaluation of several endocrine issues, including diagnosis and management of Type 1 and Type 2 Diabetes Mellitus, growth and sexual development, gender care, lipid disorders, thyroid disorders, pituitary disorders, and calcium and vitamin D disorders. Students will complete a pediatric endocrine handout during their rotation, which will cover core topics. Students also participate in a monthly diabetes journal club and in weekly intra- and interdepartmental endocrine clinical and research conferences. Students will make a presentation to the endocrine group at the end of the rotation. Students will receive a grade for their rotation. Students will receive a schedule with their locations and responsibilities along with handouts the week prior to their start of rotation. They should email Dr. Robert Benjamin, course director, to confirm this the week prior to their rotation. His contact email is robert.benjamin@duke.edu. Credit: 4, with 1 credit for every week of the course. Enrollment: max 1. *Robert Benjamin, MD; Michael Freemark, MD; Deanna Adkins, MD; Laura Page, MD; and Pinar Gumus, MD*

PEDS-427C. Pediatric Hematology/Oncology. This course includes all aspects of clinical and laboratory hematology (with a focus on sickle cell disorders) as well as the diagnostic evaluation, care, and treatment of patients with malignant diseases (childhood leukemia, lymphoma, osteosarcoma, neuroblastoma, Wilm's tumor). Emphasis will be placed on fundamental concepts of pediatric hematology/oncology. Students will spend their time in the pediatric hematology-oncology and pediatric neuro-oncology outpatient clinics evaluating new patients and seeing established patients. Students will be expected to attend divisional teaching conferences. Location: Hanes House, room 382; Box number 102382. For more information, please contact Dr. Kreissman via email at susan.kreissman@duke.edu. Prerequisite: Interested students must contact the course director. For questions, please contact Amanda Coates (Amanda.coates@duke.edu) Credit: 4. Enrollment: max 1. *Susan Kreissman, MD; Laurie Graves*

MD, Dan Landi MD; Corinne Linardic MD/PhD; Avani Mangoli, Jennifer Rothman MD; Nirmish Shah MD, Kristin Schroeder MD; Jessica Sun MD; David Van Mater, MD/PhD; and Lars Wagner, MD

PEDS-429C. Pediatric Rheumatology - Comprehensive. This course provides three to four weeks of experience in the evaluation, diagnosis, management, and follow-up of patients with possible rheumatologic diseases. Students will work closely with the pediatric rheumatology team, especially the fellow and attendings, both in the clinic and inpatient service. They will have the opportunity to provide the initial assessment and management plans for patients referred to pediatric rheumatology. Enrollment Max: 2; Credit: 4. Permission of the Instructor is required for enrollment. Students should meet at 8:00am on the first day and they must contact Dr. Mary Buckley in advance to confirm meeting location. The class meets M-F. For more information, students must contact Dr. Buckley, via email, mary.buckley@duke.edu. *Mary Buckley, MD; Rebecca Sadun MD; and all faculty in the Division of Pediatric Rheumatology*

PEDS-430C. Healthy Lifestyles Program: A Clinical, Family-Based Approach to Pediatric Obesity. Comprehensive outpatient treatment for childhood obesity. Through observed and direct interactions with families, children and adolescents in an outpatient clinical setting, students will learn the causes and complications of pediatric obesity, and the approach to management. Healthy Lifestyles is a multidisciplinary clinic which allows students to interact with and observe pediatricians, nutritionists, physical therapists and mental health providers. Students are expected to attend clinic Monday through Friday, according to a calendar which will be provided by the course director at the start of the rotation. While students will receive training in motivational interviewing (MI), an evidence-based communication technique to achieve effective behavior change during this rotation, a familiarity with MI and good communication skills are strongly preferred as the clinical environment is considered an advanced communication skills rotation. Students will be expected to participate actively in weekly noon team learning seminar (Thursdays) and to present a topic of the student's choice near the end of the rotation. Lastly, the course director will provide students with a reading list on pertinent topics to be completed by the end of the rotation and discussed with course director during final feedback session. Report to Duke Children's Primary Care Clinic, 4020 Roxboro Road, second level. Students will be required to attend and participate in ONE session of a community fitness program for children, called Bull City Fit. Students will play games, sports, and/or participate in cooking classes with families. From this experience, students will gain an understanding of community engagement, health advocacy and program planning. For questions, email the course director, Dr. Sarah Armstrong (sarah.c.armstrong@duke.edu) and secondary contact support staff Kim Yancey (Kim.yancey@duke.edu) Credit: 4. Enrollment: max. 1. *Sarah Armstrong, MD; Naomi Duke MD; Martha Nelson, PA-C; Katherine Caro, PA-C; Jenny Favret, MS, RD, LDN; Stephanie Bryant, MPH, RD, LDN; Heidi Pongracz, MPH, PT; Victoria Smith, PT, DPT, PCS; Lisa Honeycutt, LPC*

PEDS-431C. Clinical Pediatric Cardiology. This Medical Student rotation provides a learning experience in the clinical diagnosis and management of heart disease in children. The student will have the opportunity to see and participate in the management of children referred for cardiology evaluation or follow-up via clinic or consultation. There are also experiences

available observing cardiovascular procedures in the Pediatric Cardiac Catheterization and Electrophysiology Laboratory, the Pediatric Echocardiography Laboratory, and the operating room. Cardiology clinics are located in Creekstone, Greensboro, in addition to the Children's Health Center, and assignments can be expected in many of these clinics to create a diverse experience. This is primarily an outpatient rotation, but there is the option of attending inpatient rounds in the Pediatric Cardiac Intensive Care Unit if desired. Experiences in subspecialty clinics such as Pediatric Heart Failure/Transplant and Inherited Arrhythmia clinic are generally available if interested. Please note that procedural experiences are all observational due to complexity (participation is generally a Fellow level experience). Scope: history, physical examination, and special diagnostic techniques (echocardiography, electrocardiography, cardiac catheterization, and cineangiography). Students participate in outpatient clinics or procedural observational experiences five days per week as well as weekly cardiology/cardiovascular surgery conference. Prerequisite: PEDS 205C. For more information, please call the course director, Dr. Zebulon Spector, at 919-681-6772 or by email, zebulon.spector@duke.edu. Secondary Contact: Dr. Michael J. Campbell, michael.campbell2@duke.edu, or 919-684-3574. Credit: 4. Enrollment: max 1. *Zebulon Spector, MD; Other faculty: Piers C.A. Barker, MD; Michael G.W. Camitta, MD; Michael J. Campbell, MD; Michel P. Carboni, MD; Reid Chamberlain, MD; Lindsay Edwards, MD; Gregory Fleming, MD; Kevin Hill, MD; Salim F. Idriss, MD, PhD; Andrew Landstrom, MD, PhD; Jennifer S. Li, MD; Laura Lowrey, MD; Andrew McCrary, MD; Angelo Milazzo, MD; Stephen Miller, MD; Patsy Park, MD; Neeta Sethi, MD; Erin Shea, MD; Jason Williams, MD; McAllister Windom, MD, MPH*

PEDS-433C. Allergy and Clinical Immunology. Clinical outpatient experience in evaluation and management of atopic diseases including food allergy, allergic rhinitis, atopic dermatitis, asthma, and others; immunologic deficiency states, and bone marrow transplantation. Optional inpatient experience if student is interested. Scope: in-depth seminars, history, physical examination, skin testing, a variety of clinical immunologic tests, and Clinical Research Unit experience. For more information, please contact the Program Director, Dr. Amy Stallings via email at amy.stallings@duke.edu. Please contact Dr. Stallings at least one week prior to the start of your rotation to receive instructions. Credit: 4. Enrollment: max 2. *Amy Stallings, MD; John Sleasman, MD, Niraj Patel, MD; Talal Mousallem, MD, M. and Julie Kim-Chang, MD*

PEDS-434C. Clinical Genetics/Metabolism. The student becomes familiar with evaluation and management of various genetic disorders including malformation syndromes and biochemical disorders. History-taking, pedigree construction and analysis, specialized aspects of the dysmorphological physical examination, diagnostic techniques, routine and specialized laboratory methods (cytogenetic, biochemical, molecular), and reference materials (texts and computer programs) are covered. Students participate in weekly teaching and clinical conferences. For more information and to obtain a schedule and directions for where to meet on the First Day of Classes please email marie.mcdonald@duke.edu. Credit: 4. Enrollment: max 2. *Marie McDonald, MD*

PEDS-436C. Pediatric Neurology. Students will partake in the evaluation and management of both hospitalized and ambulatory pediatric patients with neurological disorders. Emphasis is placed on the neurodevelopmental history, neurological examination, the use of laboratory tests and radiological tools and pharmacotherapy in the diagnosis and management of

childhood neurological disorders. Administrative contacts: Kristin Johnson (kristin.johnson@dm.duke.edu) at 681-4658. Students should report to the PEDS Neuro office in the CHC room T0913. Please meet promptly at 8:00 a.m. Pre-requisite: students must contact Dr. Shital Patel (shital.h.patel@duke.edu) prior to enrollment. Credit: 4. Enrollment: max 2. *Shital Patel, MD*

PEDS-440C. Advanced General Pediatrics-Intensive Care. This advanced course is designed to allow students a four-week experience in the Pediatric Intensive Care Unit (PICU). Clinically, students will first have a several day period of shadowing non-physician ICU staff (RNs, RTs, SWs), followed by several weeks of participating in the physician team caring for PICU patients. Overnight and weekend call is not expected. Academically, students are asked to choose a project (written case presentation or critical appraisal of a published study) to be completed by the end of the rotation. Emphasis is placed on the development of the pathophysiologic approach to the diagnosis and therapy of a broad spectrum of pediatric illnesses as they present in acute care settings. Pre-requisite: PEDS 205C. Credit: 4. Enrollment: max 1. For more information, please contact Dr. Straube via email at tobias.straube@duke.edu.

PEDS-441C. Pediatric Nephrology. Students actively participate in assigned patient care, and prepare didactic presentations as a part of instruction. Clinical work provides the students with exposure to clinical nephrology and basic renal physiology. The course will provide experience in diagnosis, interpretations of laboratory tests, natural history, and treatment of acute and chronic disorders of the kidney in children. The student will participate in the management of fluid and electrolyte disorders in infants and children. Consultative services are provided for inpatients and outpatients from general and subspecialty disciplines in pediatrics, intensive care units, and the transplant services. For more information, please contact Dr Sheldon via email at candice.sheldon@duke.edu. Credit: 4. Enrollment: max 1. *Candice Sheldon, MD; Eileen Chambers, MD; Annabelle Chua, MD; R. Gbadegesin, MD; Reeti Kumar, MD; and Shashi Nagaraj, MD/MBBS*

PEDS-446C. Pediatric Stem Cell Transplant Unit. This four-week elective is designed to give medical students experience in all aspects of clinical hematopoietic stem cell transplantation including the diagnostic evaluation, care, and treatment of transplant patients. Emphasis is placed on fundamental concepts of hematopoietic stem cell transplantation. Students will accompany the inpatient team on the ward rounds for 3 weeks of the rotation with the remaining time spent in the clinic evaluating new patients and seeing established patients. Students also are expected to attend divisional teaching conferences and give informal presentations on topics in hematopoietic stem cell transplantation. Students should join the inpatient team on Monday at 8:00 a.m. on Duke Central Tower nursing unit 4A for the first day of the rotation. For more information, contact Dr. Martin at paul.martin@duke.edu, or pager, 970-3758. Secondary contact: Tim Driscoll, 668-1120. Credit: 4. Enrollment: max 2. *Kris Mahadeo, MD; Tim Driscoll, MD; Andrea Bauchat, MD; Paul Martin, MD/PhD; Joanne Kurtzberg, MD*.

Psychiatry

Sub-Internships

PSYCHTRY-401C. Sub-Internship in Psychiatry. This course is an intensive clinical experience in the diagnosis and treatment of severe and incapacitating psychiatric disorders. The student is given more clinical responsibility than the comparable second year inpatient rotation. Patient care responsibilities include management of ward milieu. Treatment approaches emphasizing psychotropic medication, individual, and family psychotherapy are part of the clinical experience. Participation at patient care conferences and didactic lectures is expected. Call is taken on the weekend. For more information, please contact Dr. Julie Penzner via email at julie.penzner@duke.edu. Pre-requisites: instructor approval and satisfactory completion of PSC-205C (or equivalent for visiting students). Secondary contact: Cathy Lefebvre, email at cathy.lefebvre@duke.edu or phone at 684-2274. Credit: 5. Enrollment: max 2. *Julie Penzner, MD*

PSYCHTRY-407C. Sub-Internship in Internal Medicine-Psychiatry. This course is an intensive clinical experience in the diagnosis and treatment of acute co-morbid medical and psychiatric disorders requiring acute hospitalization. Students participating in this four-week elective based in Duke North Hospital are expected to function at intern-level, assuming care of a small census of complex patients. The Medicine/Psychiatry faculty on the GenMed 12 service provides direct supervision. The goal of the elective is to refine and then clinically apply basic knowledge from the fields of Internal Medicine and Psychiatry. Participation at selected case conferences and didactic sessions is expected. Students are invited to attend the intern lecture series during Psychiatry Academic Half-day and educational offerings in Internal Medicine, including Intern Report. For more information, please contact Dr. Kristen Shirey, kristen.shirey@duke.edu; secondary contact: Cathy Lefebvre, cathy.lefebvre@duke.edu. Preference is given to students considering a career in combined Medicine-Psychiatry. Prerequisite: successful completion of PSYCHTRY-205C and MEDICINE-205C. C-L MEDICINE 407C. Permission is required. Credit: 5. Enrollment: max 1. *Kristen Shirey, MD*

Clinical Science Electives

PSYCHTRY-445C. Consultation-Liaison Psychiatry. The Psychiatry Consultation-Liaison Service at Duke Medical Center offers a clinical clerkship in the evaluation and management of psychiatric disorders in the medical and surgical setting. The student performs psychiatric consultations for medical and surgical services under direct supervision of residents and senior staff. Topics in psychosomatic medicine, psychopharmacology and medico-legal issues are discussed. Unique issues in psychiatric presentations of medical illness and adaptation to illness are reviewed. Students may attend an outpatient psychiatric consultation clinic in addition, upon request and pending availability. Students attend the weekly MedPsych conference and Psychiatry Academic Half-day educational offerings. Hours are generally 8am-6pm M-F. Call the consult pager to arrange meeting place on first day (970-PSYC). Students need to check with Dr. Shirey in advance via email at kristen.shirey@duke.edu, or the secondary contact, Cathy Lefebvre, cathy.lefebvre@duke.edu, to confirm the availability of this rotation.

Prerequisites: instructor approval and satisfactory completion of PSC-205C. Credit: 4. Enrollment: max 1. *Kristen Shirey, MD*

Radiation Oncology

Clinical Science Electives

RADONC-415C. Clinical Radiation Oncology. Radiation oncology plays a crucial role in the management of patients with cancer. The student begins this course with lectures, individual tutorials, and audio-visual education programs to review the crucial elements of radiation biology, medical radiation physics, and dosimetry. This is followed by clinical instruction based in the ambulatory clinics of the Radiation Oncology Department as well as participation in brachytherapy procedures, care of inpatients, and new patient consultations. This course provides an introduction to the role of radiation therapy in the treatment of malignant disease. For more information, please contact Dr. Larrier at 668-7342 or via email at larri003@mc.duke.edu. NOTE: This elective does require student to complete rotations at the VA Medical Center. Students applying for this rotation MUST complete all VA paperwork no later than one month prior to the first day of classes. Students should report to Room 005113 [Sub-basement, White Zone, Duke Clinic] at 7:45am on the first day of the rotation. Credit: 4. Enrollment: max 2. *Nicole Larrier, MD and staff*

Radiology

Clinical Science Electives

RADIOL-403C. Genitourinary Imaging. The 4th year elective in Genitourinary Imaging (GUI) is designed to educate medical students pursuing a career in urology about the most common procedures within the field of GUI. The students will be involved in: (1) education about the diverse imaging modalities used in GUI; (2) imaging indications and techniques unique to GUI; and (3) review and interpretation of various studies. Documentation skills will be taught. By the end of the rotation, the student should be capable of preliminary interpretation of GU imaging studies. Permission of the instructor is required for enrollment. Credit: 4. Enrollment max: 1. Direct questions about the course to Dr. Leder, richard.leder@dm.duke.edu. Secondary contacts: Bridgit Holmes (bridgit.holmes@duke.edu) and Deborah Griffin (deborah.griffin@duke.edu). *Richard Leder, MD; Other Abdominal Imaging Faculty*

RADIOL-406C. Advanced Vascular and Interventional Radiology. The 4 week 4th-year elective in Interventional Radiology is designed for students interested in pursuing interventional and/or diagnostic radiology and is an immersive experience with the Interventional Radiology team. Students will be involved in: (1) pre-procedural patient care: focused patient assessment

(in a clinic setting, as well as in the inpatient consult setting), review of imaging, and informed consent process; (2) intra-procedural care: devices, terminology, and technique; and (3) post-procedural patient care: focused patient assessment (in the radiology recovery room, as well as in the inpatient setting), procedural documentation/reporting, and patient follow-up planning. Documentation skills will be taught. By the end of the rotation, the student should be capable of determining whether a procedure is needed routinely, urgently or emergently; will be able to select the most indicated procedure based on patient presentation (develop a management plan); and will be knowledgeable about pre- and post- procedure patient care. Pre-requisites: Permission of the instructor is required. Students that take the two-credit Vascular & Interventional Radiology (VIR) course are not eligible to take this four-credit elective. Enrollment Max. 2; Credit: 4. For more information about the course, please contact Jen Eberhard (jen.eberhard@duke.edu) and Deborah Griffin (deborah.griffin@duke.edu). *Jonathan G. Martin, MD. Course Faculty: Nicholas Befera, MD; Brendan Cline, MD; Charles Kim, MD; Waleska Pabon-Ramos, MD/MPH; James Ronald, MD/PhD; Alan Sag MD; Tony Smith, MD; and Paul Suhocki, MD*

RADIOL-420C. Pediatric Radiology. RADIOL 420C. Pediatric Radiology. Pediatric radiology is unique from other radiology subspecialties in that almost all imaging modalities (plain film, ultrasound, fluoroscopy, CT, MR examinations) and organ systems (e.g. brain and spine, chest, gastrointestinal tract, musculoskeletal system) are evaluated on a daily basis. Moreover, there are many disease processes and presentations that are unique to children. The importance of understanding normal vs abnormal development is also unique to pediatric imaging. Students can learn by observing patients, nurses, technologists and radiologists during image acquisition in pediatric fluoroscopy, ultrasound, CT and MRI as well as in the reading room observing and helping the radiology residents, fellows and attendings protocol, interpret, and discuss pediatric imaging cases. The imaging modalities used to evaluate a child's injury or illness are openly discussed, during film interpretation. Each history is reviewed, clinical question addressed, and the exams are formulated to optimize obtainable information while minimizing patient risks (e.g. radiation exposure or need for sedation). Other learning tools include computer access to teaching file cases, online teaching files, daily case conferences and subspecialty multispecialty case conferences. Medical students are encouraged to ask questions and participate in preliminary film interpretation and to dictate several live cases that will be staffed by an attending radiologist. Two cases are to be selected and briefly presented at an interesting case conference. A rubric for the case presentation expectations will be provided. This case will be added to the division's electronic teaching file. There is an extensive 'to do' list to guide study and encourage physician and patient interaction. This 'to do' list is to be completed and turned in for assessment. A copy of Pediatric Radiology by Lane Donnelly is available for loan during the rotation, assigned reading also includes some selected articles from the pediatric radiology literature. A written or oral exam may be given at the end of the course. Two days of absence are allowed. For more information, please contact Dr. Caroline Carrico at 919-684-7514 or carri026@mc.duke.edu or her assistant Candie Stewart. Course begins at 8:30 a.m. in Pediatric Radiology Division, 1st Floor Children's Health Center - 1905B. Credit: 4. Enrollment: max 1 (more than one is possible with special permission some months. Please email her at caroline.carrico@duke.edu for special requests). Pediatric Radiology Faculty include: *Caroline Carrico, MD; Charles Maxfield, MD, Michael Fadell, MD Division Chief, Donald Frush, MD, Logan Bisset, MD, Ana Gaca, MD, Joe Cao, MD*

RADIOL-421C. Clerkship in Neuroradiology. A specialized program of detailed instruction in neuroradiology. The program includes participation in many interdepartmental conferences and the performance and interpretation of a variety of examinations including cerebral angiography, computerized axial tomography, magnetic resonance images, and myelography. This is mainly an observational rotation. There is an optional honors presentation available for credit. Grade is based on reading room attendance and conference attendance. For more information, please contact Dr. Jessica Houk via email at jessica.houk@duke.edu. Secondary contact: Babbie Williams, (919) 684-7406 or via email at babbie.williams@duke.edu. The student will receive a welcome email, providing details regarding an Orientation on their first day. Thereafter, the student can report to the Neuroradiology reading room DMP1W98 in Duke Medicine Pavilion. Credit: 4. Enrollment: max 2. *Jessica Houk, MD and staff*

RADIOL-437C. Musculoskeletal Imaging. During this four-week elective, the student will be exposed to conventional x-rays in bone radiology, emergency room bone films, bone tumor films and musculoskeletal MRI. At the conclusion, the student will be able to identify fractures and have a working knowledge of musculoskeletal radiology. Several presentations will be required. Reading will be required. There is a test at rotation's end. For more information, please contact Dr. Robert French via email at robert.french@duke.edu. Secondary Contact: Deborah Griffin (deborah.griffin@duke.edu). Credit 4. Enrollment: max. 2. *Robert French, MD; Drs. Roy Colglazer, MD; Leah Waldman, MD; Jay Willhite, MD; Nick Said, MD; and Emily Vinson, MD*

Surgery

Sub-Internships

SURGERY-401C. Advanced Surgical Clerkship. The course aims to provide an intense educational experience with graded responsibility of surgical care. The student selects a specific surgeon mentor and is expected to attend multidisciplinary conferences, e.g. gastrointestinal, vascular, transplant, endocrine, oncology, etc. The student is expected to evaluate surgical patients in an outpatient setting as well as participating in inpatient and operative patient care. Attendance at clinical research conferences, case conferences, grand rounds, and sub-specialty conferences is required. Graded patient care responsibility under supervision is encouraged to prepare the student for future assumption of duties as a house officer able to diagnose and treat surgical diseases. Students must verify with the specific attending that he/she is available during the time the student wishes to enroll in Surgery 401C. Only one student can work with a specific attending during any one-time period. Permission of instructor is required. For information about the course, please contact Dr. Kevin Shah at kevin.n.shah@duke.edu or by phone at 684-6553. To obtain permission (and permission numbers) to enroll in the course, students should contact Ben Latta via email at thomas.latta@duke.edu. Credit: 5. Enrollment: min. 1, max 8. *Kevin Shah, MD. Available mentors: Suresh Agarwal, MD; Peter Allen, MD; Andrew Barbas, MD; Trey Blazer, MD; Benjamin Bryner, MD; Mitchell Cox, MD; Thomas D'Amico, MD; Georgia Beasley, MD; Jeffrey Gaca, MD; Donald Glower, MD; Rachel Greenup, MD; John Haney, MD;*

David Harpole, Jr., MD; Sandhya Lagoo, MD/PhD; Shelly Hwang, MD/MPH; Stuart Knechtle, MD; Michael Lidsky, MD; Andrew Lodge, MD; Christopher Mantyh, MD; John Migaly, MD; Theodore Pappas, MD; Dana Portenier, MD; Kadiyala Ravindra, MD; Henry Rice, MD; Laura Rosenberger, MD; Randall Scheri, MD; Jacob Schroder, MD; Cynthia Shortell, MD; Julie Thacker, MD; Elisabeth Tracy, MD; Betty Tong, MD; Steven Vaslef, MD/PhD; Cory Vatsaas, MD; and Sabino Zani, MD

SURGERY-403C. Sub-Internship Plastic Surgery Integrated Program. This course is designed for students who have an interest in plastic surgery as a career. Duties are similar to a first year resident. This course provides the student with an in-depth overview of clinical activities, emergency room call, inpatient care and assisting in the operating room, ward rounds and conference participation. This course will also provide primary responsibility for patient care similar to an internship in a supervised fashion. This rotation will involve more time commitment than our regular rotation with additional call and work responsibilities of up to 80 hours a week. Pre-requisite: Permission is required for enrollment. For more information and/or to obtain a permission number, students must contact or Chris Duke, (christine.g.duke@duke.edu) to obtain a permission number. The course director or the clinical contact do not assign permission numbers. Clinical Contact for Students: Erica Sudyk (erica.sudyk@duke.edu) Enrollment Max: 3, unless otherwise noted. Credits: 5. *Geoffroy Sisk, MD and Erica Sudyk, PA-C*

SURGERY-441C. Sub-Internship in Surgical Intensive Care. This course is designed to broaden the student's knowledge and experience in dealing with a wide array of critically ill patients. Under supervision, students function as sub-interns in the Surgical Intensive Care Unit (SICU). Students are assigned their own patients and actively participate in daily rounds as part of the SICU team which includes intensivists, fellows, APPs, and residents. There are on-line didactic lectures which are expected to be completed during the month on core aspects of critical care, as well as weekly Critical Care Grand Rounds and ICU fellow conferences. Students rotate among the different teams with typically 3 weeks of daytime service coverage and a week of overnight coverage to maximize your education and experience. Shifts are 12 hours not including sign out of the service to the oncoming team. Students will work with SICU fellows and house staff in the supervised management of critically ill patients. Four weeks are spent in the SICU at Duke University Medical Center (trauma, vascular surgery, liver-kidney-pancreas transplantation, general surgery, surgical subspecialties, MICU and NICU overflow). There is emphasis on teaching of procedures and techniques necessary for the management of all critically ill patients including hemodynamic assessment and monitoring, cardiovascular resuscitation and use of vasoactive drugs, ventilator management including ARDS, prevention and management of nosocomial infections, and nutritional support. Students are formally evaluated by the SICU house staff and the attending physician. For more information, please contact Dr. Cory Vatsaas at 684-3636 or via email, cory.vatsaas@duke.edu. Further information and direction may be provided by the SICU fellow and attending of the week. The schedule is available in the SICU or by calling the SICU at 681-2241 to find out who is rounding that week. House staff sign out begins at 6:00 a.m. in the SICU. C-L: ANESTH-441C. Credit: 5. Enrollment: max 3. *Cory J. Vatsaas, MD and staff*

Clinical Science Electives

SURGERY-406C. Endocrine Surgery. The Endocrine Surgery Elective will allow fourth year medical students to be exposed to and participate in the preoperative, intraoperative and postoperative care of endocrine surgery patients. This patient population encompasses a wide variety of benign, malignant, hormonally active, and hereditary endocrine diseases of the thyroid, parathyroid, adrenal and neuro-endocrine pancreas/systems which are evaluated in a multidisciplinary clinic along with medical endocrinology, oncology, pathology, genetics, and radiology. A working knowledge of these diseases and their multidisciplinary management is critical to a career in internal medicine or surgery. For more information about the course students should contact Dr. Randall Scheri at r.scheri@duke.edu. Students should report to Dr. Scheri's office located at 463 Seeley Mudd Building on the first day of class. Credit: 4. Enrollment max: 2. *Randall P. Scheri, MD; Hadiza Kazaure, MD; and Michael Stang, MD*

SURGERY-411C. Vascular & Endovascular Surgery Elective. The elective curriculum is flexible depending on student's interest. Students will spend four weeks on the inpatient vascular surgery service at Duke Main campus. This will involve seeing inpatient consults, rounding on the inpatient service, and scrubbing into both open and endovascular cases in the operating room and cath lab. If you have questions about the elective course, please contact the course director, Dr. Adam Johnson, (adam.johnson@duke.edu). Please reach out to Lee Hines (lee.hines@duke.edu), Program Coordinator, to obtain information regarding schedule and meeting time/location. Pre-requisite: Permission of the course director is required for enrollment. The course is scheduled M-F; overnight call is optional. Maximum Enrollment: 1; Credit: 4. *Adam Johnson, MD; Chandler Long, MD; Heather Waldrop, MD; and Zach Williams*

SURGERY-420C. General Surgical Oncology. The course is designed for the student interested in surgical oncology. Students will typically spend 1-2 weeks on 2-3 different services. Students will rotate on services with a focus on Hepatobiliary, Pancreas, Breast, Endocrine, Colorectal, Soft Tissue Sarcoma, and Melanoma disease sites. The students are involved in patient care with a specific surgeon but, in addition, are expected to attend multidisciplinary conferences related to the disease site of interest that week. These multidisciplinary conferences involve medical and radiation oncology as well as surgical oncology. The student is also expected to evaluate surgical patients in an outpatient setting as well as participating in inpatient and operative patient care. There is no overnight call responsibility. For more information, please contact Dr. Trey Blazer via email, trey.blazer@duke.edu or contact Ben Latta at (thomas.latta@duke.edu). Permission is required. Credit: 4. Enrollment: min 1, max 4. *Trey Blazer, MD*

SURGERY-443C. Trauma Service. This course is designed to provide students interested in trauma care and emergency general surgery with further experience both in the Emergency Department and on the Inpatient Trauma Service. The course emphasizes both triage and resuscitation for major and minor emergency problems in the Emergency Department and also pre- and postoperative care on the Inpatient Trauma Service. There are opportunities to enhance the student's education by participating with the acute care surgery service, emergency general

surgery consultation, and coverage of acute care general surgery operations. The student has a full-time experience by assuming duties and responsibilities similar to a sub-intern. Emphasis is placed on developing skills in the care of patients with multi-system injuries in the Emergency Department, Inpatient Service, and Operating Room. Students work in conjunction with the attending staff, residents on the Trauma Service, and our advanced practice providers. Students will typically spend three weeks covering daytime trauma service obligations and one week of night coverage to maximize your education and experience. For more information, please contact Dr. Cory Vatsaas at 684-3636 or via email at cory.vatsaas@duke.edu. Additional information can be obtained by the Trauma Chief, who is the senior resident on the service, pager 970-9995. Students should meet in the General Surgery Resident bunker/lounge on the 3rd floor DMP across from the DMP OR entrance at 6:00 a.m. on the first day of the rotation. Credit: 4. Enrollment: max 3. *Cory Vatsaas, MD; and staff*

SURGERY-444C. Introduction to Plastic, Reconstructive and Maxillofacial Surgery. This course is designed for students who may have a future interest in plastic surgery. Duties include the preoperative evaluation of patients, assisting in the operating room, making daily ward rounds, and participation in conferences. Permission is required for enrollment. For more information and to request a permission number to enroll, students must contact Chris Duke via email christine.g.duke@duke.edu. Clinical Contact for Students: Erica Sudyk (erica.sudyk@duke.edu). Credit: 4. Enrollment: max 2, unless otherwise noted. *Geoffroy Sisk, MD and Erica Sudyk, PA-C*

Urology

Sub-Internship

UROLOGY-401C. Sub-internship in Urologic Surgery. Students will participate in the diagnosis, management, and surgical treatment of a broad range urologic disorders in adults and children. In addition to a busy general urology practice, Duke provides state-of-the-art, specialized care for urinary stones, infertility, reconstruction, oncology and pediatric urology. Surgical experiences include open, endoscopic, robotic, microscopic, and minimally invasive surgical techniques. The goal of our sub-internship is to provide motivated students with a rich and authentic experience in the breadth and rewards of a Urology career. To that end, students will assume intern-level responsibilities to include managing inpatients, seeing clinic, actively participating in surgery, and evaluating, treating and dispositioning consult and on-call patients. Please contact Dr. Baker at Karen.Baker@duke.edu for more information and to obtain your permission number. Secondary contact: Apryle Graham (apryle.graham@duke.edu). Prerequisite: Permission is required. Credit: 5. Enrollment max: 4. *Karen Baker, MD and urology staff*