



VIRGINIA TECH CARILION
SCHOOL OF MEDICINE
COURSE CATALOG
2018-2019

Integration Transitional Table

VT Course Number	VTCSOM Course Number	Transcribed Course Title
9060	MED 600	Orientation to Medical School
9061	MED 601	Block I:Functional Biology Cells Tissue
9062	MED 602	Block II:Human Body I
9063	MED 603	Block III:Human Body II
9064	MED 604	Block IV:Biology of Nervous System
9M1R	MED M1RES	M1 Research
9071	MED 701	Block V:Fundamentals of Pathobiology
9072	MED 702	Block VI:Pathobiology Human Body I
9073	MED 703	Block VII:Pathobiology Human Body II
9074	MED 704	Block VIII:Pathobiology Human Body III
9M2IS	MED M2 IS	M2 Independent Study
9M2R	MED M2RES	M2 Research

YEAR ONE

9060/MED 600. Orientation to Medical School and to VTCSOM (1 credit)

Topics for this course include:

Patient-Centered Learning Case Process, Introduction to the Curriculum and Value Domains, VTCSOM Student Policies and Procedures, Introduction to Student Services, Introduction to Student Health and Well-Being

Prerequisite(s): None

Co-requisite(s): None

9061/MED 601. Block I: Functional Biology of Cells and Tissues, Patient-Centered Interviewing and Physical Exam I, Fundamentals and Foundations of Research, Interprofessional Teamwork and Roles for Collaborative Practice (11 credits)

Topics for this course include:

Functional Biology of Cells and Tissues: Molecules, Genes, Chromosomes, Proteins, Cells, Tissues, Metabolism, Transcription, Translation, Musculoskeletal System, Early Development, Pharmacodynamics, and Pharmacokinetics

Interviewing and Physical Exam I: Patient-Centered Interviewing, Introduction to the Physical Exam (Musculoskeletal Exam including Ultrasound)

Fundamentals and Foundations of Research: The Scientific Method, Thinking Like a Scientist Physician, Basic, Clinical, and Translational Research Principles, The Protection of Human Subjects in Research, The Use and Protection of Animals in Research, Research Live, and the Medical Scholar Series

Interprofessional Teamwork and Roles for Collaborative Practice: Public Health Walk, Learning in Medical School and Beyond, Introduction to Team Building, Healthcare Roles and Responsibilities, Team Contracts, Team Formation, Personal Journey, Goal Setting, Teamwork Concepts, and This I Believe Statements

Prerequisite(s): 9060

Co-requisite(s): None

9062/MED 602. Block II: Human Body I, Interviewing and Physical Exam II, Research, Interpersonal/Interprofessional Communication and Roles for Collaborative Practice (11 credits)

Topics for this course include:

Human Body I: Immunology, Cardiovascular, Respiratory, and the Autonomic Nervous System

Interviewing and Physical Exam II: Patient and Doctor-Centered Interviewing (History of Present Medical Illness, Past, Medical, Family, Medications & Habits), Vital Signs, Heart and Lungs, BMI, Vascular Ultrasound, Longitudinal Ambulatory Care Experience (LACE)

Research: Biostatistics, Research Live and the Medical Scholar Series

Interpersonal/Interprofessional Communication and Roles for Collaborative Practice: Roles of Team Members, Communication Skills, Academic Differences and Similarities among Professions, Community Service, Healthcare Team Leadership

Prerequisite(s): 9060 - 9061

Co-requisite(s): None

9063/MED 603. Block III: Human Body II, Interviewing and Physical Exam III, Research, Interpersonal and Interprofessional Communication and Roles for Collaborative Practice (11 credits)

Topics for this course include:

Human Body II: GI Tract, Liver and Biliary, Renal, Endocrine, and Reproduction

Interviewing and Physical Exam III: Patient and Doctor-Centered Interviewing (Personal & Social Hx), Abdominal Exam, Male and Female Genitourinary Exams, Breast Exam, Cultural Considerations, Abdominal Ultrasound, LACE

Research: Epidemiology, Research Live, the Medical Scholar Series, Research Mentor and Project Selection

Interpersonal/Interprofessional Communication and Roles for Collaborative Practice: Roles of Team Members, Communication Skills, Academic Differences and Similarities among Professions, Community Service, Healthcare Team Leadership

Prerequisite(s): 9060 - 9062

Co-requisite(s): None

9064/MED 604. Block IV: Biology of the Nervous System, Interviewing and Physical Exam IV, Research Outcomes, Interpersonal and Interprofessional Communication and Roles for Collaborative Practice (11 credits)

Topics for this course include:

Biology of the Nervous System: Central Nervous System, Peripheral Nervous System, Special Sensory Structures

Interviewing and Physical Exam IV: Patient and Doctor-Centered Interviewing (Review of Systems), Neurological Exam, Pediatric Development, HEENT, Dental Exam, Mental Status Exam, Normal Aging Process, LACE

Research Outcomes: Research Prospectus preparation and presentation, the Medical Scholars Series

Interpersonal/Interprofessional Communication and Roles for Collaborative Practice: Roles of Team Members, Communication Skills, Academic Differences and Similarities Among Professions, Community Service, Healthcare Team Leadership

Prerequisite(s): 9060 - 9063

Co-requisite(s): None

9M1R/MED M1 Research: Research (3 credits)

Once a research project has been selected by the student at the end of Block IV, students are guided in their project by a research mentor and small committee of basic and clinical scientists who provide regular feedback to the student on their progress. During the M1 research course, students will complete three weeks of independent research on their chosen project.

Prerequisite(s): 9060 - 9064

Co-requisite(s): None

YEAR TWO

9071/MED 701. Block V: Fundamentals of Pathobiology, Interviewing and Physical Exam V, Research, Experience and Assessment of Quality and Leadership in Interprofessional Health Care Teams (8 credits)

Topics for this course include:

Fundamentals of Pathobiology: Cells and Tissues, Necrosis, Neoplasia, Inflammation, Genetic Disorders, Immunological Diseases, Infection, Microbiology, Virology, Skin Disorders, Pharmacology, Therapeutics

Interviewing and Physical Exam V: Clinical Skills Review (Complete Hx & Physical Exam), Detailed Family & Genetic Hx, Dermatology Exam, Ultrasound, Fundamentals of Case Presentation I, Clerkship Competency Series: Gown & Glove, Health Promotion & Disease Prevention, Adult Immunizations, LACE

Research: Individual Student Research Project

Experience and Assessment of Quality and Leadership in Interprofessional Health Care Teams: Leadership and Team Performance, Systems Engineering in Health Care, Cognitive Biases that Influence Decision Making, On-site Shadowing and Evaluation of Interprofessional Healthcare Teams, and High-Fidelity Simulation Scenario

Prerequisite(s): 9060-9064 and 9M1R

Co-requisite(s): None

9072/MED 702. Block VI: Pathobiology of the Human Body I, Interviewing and Physical Exam VI, Research, Ethical and Legal Issues in Practice (8 credits)

Topics for this course include:

Pathobiology of the Human Body I: Hematology, Bleeding Disorders, White Cell Disorders, Vascular Diseases, Heart, Pulmonary, ENT, Lymph Nodes and Spleen, Microbiology, Virology, Pharmacology, Therapeutics

Interviewing and Physical Exam VI: Assessing Stages of Change: Smoking Cessation, Exam Findings in Cardiopulmonary Disease, ECG and Chest X-ray Interpretation, Clerkship Competency Series: ABG's, Venous Blood Draws, Oxygen Therapy, LACE

Research: Individual Student Research Project

Ethical and Legal Issues in Healthcare: Ethical Principles, Model of Decision Making, Law/Practice/Codes of Ethics, Workplace Ethics Now and in the Future, Moral Courage, Autonomy/Dignity/Veracity, Distributive Justice, Beneficence, Nonmaleficence, and a Case Ethics Health Care Team Challenge

Prerequisite(s): 9071

Co-requisite(s): None

9073/MED 703. Block VII: Pathobiology of the Human Body II, Interviewing and Physical Exam VII, Research, Issues in Medicine & Culture: A Course in Medical Humanities (8 credits)

Topics for this course include:

Pathobiology of the Human Body II: GI Tract, Liver, Pancreas, Renal, Male and Female GU, Breast, Microbiology, Virology, Pharmacology, Therapeutics

Interviewing and Physical Exam VII: Fundamentals of Case Presentation II, Interview Skills: Nutrition & Supplement History, OB & Sexual History; Review: Breast Exam, GU Exams, Exam Findings in GI and Renal, H & P and Psychosocial Aspects of GI, Renal, and Urogenital Diseases Including Ultrasound Findings, Abnormal Breast Exam, Clerkship Competency Series: NG Tube, Foley Catheter, LACE

Research: Individual Student Research Project

Issues in Medicine & Culture – A Course in Medical Humanities: Pain, Cancer Treatment, Death, Disability and Modern Life, and Empathy

Prerequisite(s): 9071-9072

Co-requisite(s): None

9074/MED 704. Block VIII: Pathobiology of the Human Body III, Interviewing and Physical Exam VIII, Research, Public Health and Medicine (8 credits)

Topics for this course include:

Pathobiology of the Human Body III: Oral Medicine, Endocrine, Skeletal and Soft Tissues, Musculoskeletal, Environmental and Nutritional Diseases, Central and Peripheral Nervous Systems

Interviewing and Physical Exam VIII: H & P and Psychosocial Aspects of Neuromuscular Diseases, Clinical Psychiatric Syndromes and their Underlying Neurobiological Dysfunctions, Exam Findings in HEENT and Dental Diseases, Endocrine Cases including Thyroid Ultrasound, Review Pediatric Development, Clerkship Competency Series: Suturing & Wound Care, LACE

Research: Individual Student Research Project

Public Health and Medicine: Integration of Public Health and Medicine - Public Health in the 21st Century, Social Determinants of Health, Environmental Determinants of Health, Epidemiology in Action – Outbreak Investigation, The Affordable Care Act and What It Means for Practicing Physicians, and Group Presentations

Prerequisite(s): 9071-9073

Co-requisite(s): None

9M2IS/MED M2 IS: Independent Study (8 credits)

Students will complete 6 weeks of Step 1 preparation.

Prerequisite(s): 9071-9074

Co-requisite(s): None

9M2R/MED M2RES: Research (11 credits)

Students will complete 8 weeks of independent research.

Prerequisite(s): 9071-9074 and 9M2IS

Co-requisite(s): None

Longitudinal Student Electives

VT Course Number	VTCSOM Course Number	Transcribed Course Title
9LSE		Longitudinal Student Elective

Elective time is also available in Years 1 and 2 to take such courses as Foundations of Mindfulness Practice, Introduction to Medical Spanish, and Narrative Medicine – The Rest of the Story: Discovering the Person within the Patient. These courses are offered for elective credit but are not required. Continuous registration is dependent on the student remaining in good academic standing, and the student must remain registered for the longitudinal elective during Blocks I-VII in order to earn 2 credits at the conclusion of Block VII.

Foundations of Mindfulness Practice (2 credits)

Mindfulness is the awareness that develops as we pay attention to our present-moment experience with acceptance, curiosity, and nonjudgment. This course will support students in establishing a mindfulness practice through both formal practices and in daily life. Class will be highly experiential, designed to explore mind-body awareness, mindfulness meditation and compassion practices, and mindful communication. The Koru Basic four-week mindfulness curriculum will be completed at the beginning of this longitudinal elective. Contemplative practices will support self-understanding to navigate life stressors with greater clarity, ease, and wellbeing.

Prerequisite(s): Successful completion of Block I

Co-requisite(s): None

Introduction to Medical Spanish (2 credits)

To develop communicative proficiency in medical Spanish and cultural competency for effective interactions with Spanish-speaking patients in a variety of health care settings.

Prerequisite(s): Successful completion of Block I

Co-requisite(s): None

Narrative Medicine – The Rest of the Story: Discovering the Person Within the Patient (2 credits)

This narrative medicine course seeks to develop students' attentive listening skills, empathy, reflectiveness, and narrative competence through extended patient interviews and creative response.

Prerequisite(s): Successful completion of Block I

Co-requisite(s): None

Integration Transitional Table

VT Course Number	VTCSOM Course Number	Transcribed Course Title
9811	MED 801	Clerkship - Emergency Medicine
9812	MED 802	Clerkship - Family Medicine
9813	MED 803	Clerkship - Internal Medicine
9814	MED 804	Clerkship - Neurology
9815	MED 805	Clerkship - OB-GYN
9816	MED 806	Clerkship - Pediatrics
9817	MED 807	Clerkship - Psychiatry
9818	MED 808	Clerkship - Radiology
9819	MED 809	Clerkship - Surgery
9M3R	MED M3 RES	M3 Research
9001	MED 900	Step 1 Independent Study

YEAR THREE

The Virginia Tech Carilion School of Medicine requires clerkship rotations in the following medical specialties and in Research in the M3 year:

- Internal Medicine (6 weeks)
- Family Medicine (6 weeks)
- Pediatrics (6 weeks)
- Obstetrics and Gynecology (6 weeks)
- Psychiatry (6 weeks)
- Surgery (6 weeks)
- Emergency Medicine (4 weeks) - occurs in the M3 or M4 year and has a prerequisite of having completed the Internal Medicine, Surgery, OB-GYN, and Pediatric Clerkships.
- Radiology (2 weeks)
- Neurology (2 weeks)
- Research (4 weeks)

9811/MED 801. Clerkship – Emergency Medicine (4 credits):

This clerkship will occur in the last portion of the 3rd year or during the 4th year. Students will spend the four-week clerkship in the Carilion Roanoke Memorial Hospital Emergency Department working various shifts and learning to rapidly assess a patient and initiate urgent work-ups and treatments.

Prerequisite(s): Successful completion of Years 1 & 2, 9813, 9815, 9816, 9819 and student must have taken Step 1 prior to participating in a clerkship. If a student does not successfully pass STEP 1, they may not proceed to the second clerkship in which they are registered.

Co-requisite(s): None

Duration: 4 weeks

9812/MED 802. Clerkship – Family Medicine (6 credits):

The student will work with one of the Roanoke-based Family Medicine practices. During this six-week clerkship, the student will have a wide variety of experiences and be exposed to a myriad of different patients, but should come away with firm knowledge of how to approach all of the different situations from the comprehensive, patient-centered view that characterizes Family Medicine.

Prerequisite(s): Successful completion of Years 1 & 2 and student must have taken Step 1 prior to participating in a clerkship. If a student does not successfully pass STEP 1, they may not proceed to the second clerkship in which they are registered.

Co-requisite(s): None

Duration: 6 weeks

9813/MED 803. Clerkship – Internal Medicine (6 credits):

The third-year clerkship in Internal Medicine will occur at Carilion Roanoke Memorial Hospital. It will span six weeks. The focus will be on caring for adult hospitalized patients. The six weeks will be spent working with one of the Internal Medicine teaching teams.

Prerequisite(s): Successful completion of Years 1 & 2 and student must have taken Step 1 prior to participating in a clerkship. If a student does not successfully pass STEP 1, they may not proceed to the second clerkship in which they are registered.

Co-requisite(s): None

Duration: 6 weeks

9814/MED 804. Clerkship – Neurology (2 credits):

The third-year clerkship in Neurology is a two-week experience that will be divided between working with the Carilion Clinic neurologists in the inpatient setting and the neurologists at the Salem VA Medical Center in the outpatient setting. Students will be exposed to a variety of cases and be able to observe the means by which neurologists diagnose and treat diseases of the central and peripheral nervous systems, and of skeletal muscle.

Prerequisite(s): Successful completion of Years 1 & 2 and student must have taken Step 1 prior to participating in a clerkship. If a student does not successfully pass STEP 1, they may not proceed to the second clerkship in which they are registered.

Co-requisite(s): None

Duration: 2 weeks

9815/MED 805. Clerkship – OB-GYN (6 credits):

During the OB-GYN clerkship, time will be spent on the OB and GYN services with inpatient and outpatient experiences, including on a subspecialty GYN service. Students will participate in day and night labor call for OB, and spend time in the operating room as part of patient care during their GYN education.

Prerequisite(s): Successful completion of Years 1 & 2 and student must have taken Step 1 prior to participating in a clerkship. If a student does not successfully pass STEP 1, they may not proceed to the second clerkship in which they are registered.

Co-requisite(s): None

Duration: 6 weeks

9816/MED 806. Clerkship – Pediatrics (6 credits):

The six-week Pediatric clerkship will be divided into two weeks of inpatient pediatrics at Carilion Roanoke Memorial Hospital (CRMH), one week of newborn nursery at CRMH, two weeks of outpatient general pediatrics, and one week of pediatric subspecialties. Through these clinical experiences, the student will get an extensive overview of general pediatrics.

Prerequisite(s): Successful completion of Years 1 & 2 and student must have taken Step 1 prior to participating in a clerkship. If a student does not successfully pass STEP 1, they may not proceed to the second clerkship in which they are registered.

Co-requisite(s): None

Duration: 6 weeks

9817/MED 807. Clerkship – Psychiatry (6 credits):

The six-week Psychiatry clerkship is designed to continue with the principles of lifelong learning, humanism, inquiry, and professionalism established in the preclinical years. All students participate in the same initial core four-week rotations, based on the Adult Inpatient Psychiatry units and consultation – liaison service at Carilion Medical Center. Each patient will be followed by a given student from admission to discharge. During two weeks of the clerkship the student will opt for two separate "selective" rotations of one week each.

Prerequisite(s): Successful completion of Years 1 & 2 and student must have taken Step 1 prior to participating in a clerkship. If a student does not successfully pass STEP 1, they may not proceed to the second clerkship in which they are registered.

Co-requisite(s): None

Duration: 6 weeks

9818/MED 808. Clerkship – Radiology (2 credits):

The third-year clerkship in Radiology is a two-week experience where the student will become familiar with the commonly used imaging modalities and imaging findings of medical, surgical, and traumatic conditions. Students will also become familiarized with the concepts and principles of appropriateness criteria, their incorporation in, and evolution from evidence-based medicine. This will be achieved through a variety of experiences in the Radiology Department.

Prerequisite(s): Successful completion of Years 1 & 2 and student must have taken Step 1 prior to participating in a clerkship. If a student does not successfully pass STEP 1, they may not proceed to the second clerkship in which they are registered.

Co-requisite(s): None

Duration: 2 weeks

9819/MED 809. Clerkship – Surgery (6 credits):

The focus of this six-week rotation is to introduce students to the care of surgical patients including initial patient assessment and perioperative management as well as surgical intervention itself. This rotation length will allow good continuity with the surgical team and the patients under the care of the various surgery teams.

Prerequisite(s): Successful completion of Years 1 & 2 and student must have taken Step 1 prior to participating in a clerkship. If a student does not successfully pass STEP 1, they may not proceed to the second clerkship in which they are registered.

Co-requisite(s): None

Duration: 6 weeks

9M3R/MED M3 Research: Research (4 credits)

Students will complete four weeks of independent research.

Prerequisite(s): Successful completion of Years 1 & 2

Co-requisite(s): None

Duration: 4 weeks

Electives: For students not doing the Emergency Medicine Clerkship during the 3rd year, there are four weeks of elective time available. These four weeks can be divided into 2 two-week electives or 1 four-week elective. Each two-week experience counts as 2 credits and each four-week experience counts as 4 credits.

9001/MED 900. Elective - Step 1 Preparation Independent Study (2, 4, or 6 credits):

The focus of this elective is to provide structured study time and educational resources for students who have been required to delay their Step 1 examination due to not achieving a target practice test score or for students who have taken and failed the Step 1 examination. Students will create a structured study plan and will work with the Senior Dean for Academic Affairs (or designee) in collaboration with the Senior Dean for Student Affairs and appropriate faculty to implement this independent study plan. Students may be enrolled in this course for an additional independent study if approved by the Senior Dean for Student Affairs.

Prerequisite(s): Years 1, 2

Co-prerequisite(s): None

Duration: 2, 4, or 6 weeks

Integration Transitional Table

VT Course Number	VTCSOM Course Number	Transcribed Course Title
9811	MED 801	Clerkship - Emergency Medicine
9M4R	MED M4 RES	M4 Research
9TR1	MED TTR1	Transition to Residency I
9TR2	MED TTR2	Transition to Residency II

YEAR FOUR

Required curricular components: (12 weeks) and Emergency Medicine (4 weeks) if not completed in Year 3

- Research – 2 weeks
- Transition to Residency I – 2 weeks
- Medical Subspecialty Elective – 2 weeks
- Surgical Subspecialty Elective – 2 weeks
- ICU Elective – 2 weeks
- Transition to Residency II – 2 weeks

TOTAL = 12 weeks

- Emergency Medicine Clerkship – 4 weeks

Electives: (18 or 22 weeks depending on whether Emergency Medicine was completed in Year 3)

Vacation: 8 weeks

9811/MED 801. Clerkship – Emergency Medicine (4 credits):

This clerkship will occur in the last portion of the 3rd year or the first half of the 4th year. Students will spend the four-week clerkship in the Carilion Roanoke Memorial Hospital Emergency Department working various shifts and learning to rapidly assess a patient stability and initiate urgent work-ups and treatments.

Prerequisite(s): Successful completion of Years 1 & 2, 9813, 9815, 9816, 9819 and student must have taken Step 1 prior to participating in a clerkship. If a student does not successfully pass STEP 1, they may not proceed to the second clerkship in which they are registered.

Co-requisite(s): None

Duration: 4 weeks

9M4R/MED M4 Research: Research (2 credits)

Students will complete two weeks of independent research.

Prerequisite(s): Successful completion of Years 1, 2 & 3 and the successful passage of the USMLE STEP 1

Co-requisite(s): None

Duration: 2 weeks

9TR1/MED TTRI. Transition to Residency I (2 credits)

This course occurs during the two weeks surrounding the NRMP Match. Students will participate in activities in assessment of the Entrustable Professional Activities (EPAs), will celebrate Match Day, and will present posters, abstracts, and podium presentations of their VTCSOM research projects.

Prerequisite(s): Successful completion of Years 1, 2 & 3 and the successful passage of the USMLE STEP 1

Duration: 2 weeks

9TR2/MED TTRII. Transition to Residency II (2 credits)

This course occurs during the final two weeks in the four-year curriculum. Students will take the ACLS certificate course and attend sessions on various clinical topics, debt repayment and financial aid issues, residency preparation suggestions, and legal issues.

Prerequisite(s): Successful completion of Years 1, 2 & 3 and the successful passage of the USMLE STEP 1

Duration: 2 weeks

ELECTIVES

Basic Science

Emergency Medicine

Family Medicine

Internal Medicine

International

Interprofessionalism

Medical Education

Neurology

Obstetrics and Gynecology

Orthopaedics

Pediatrics

Psychiatry

Radiology

Surgery

Away Elective

Independent Study

Research

*At the discretion of the Elective Director, prerequisites for an elective may be waived.

Basic Science

VT Course Number	VTCSOM Course Number	Transcribed Course Title
9B01	MED 900 BS-A	Anatomy Prosection
9B03	MED 900 BS-D	Forensic Pathology
9B04	MED 903R	Pathology

9B01/MED 900 BS-A. Elective - Anatomy Prosection (2 credits):

The goal of this elective is to increase the knowledge of students in prosection in specific anatomical areas. Objectives are to identify and prosect an area of anatomic interest, identify one pathological condition associated with the area dissected and describe findings, describe clinical significance of dissected area during course of a clinical procedure, describe age-related variations in the dissected area, describe how an age-related difference would affect clinical care, and identify normal variations, if any.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

9B03/MED 900 BS-D. Elective - Forensic Pathology (4 credits):

Medical students will be exposed to daily procedures of Forensic Pathology with the expectation that students will learn to determine cause of death, based on circumstances surrounding death, past medical history, and pathological diagnoses determined in the course of autopsy examination. Students will learn to properly complete a death certificate and how to testify in court as an expert witness. Also, students will learn about the impact of cases on public health and safety.

Prerequisite(s): Years 1, 2

Co-requisite(s): None

Duration: 4 weeks

9B04/MED 903R. Elective - Pathology (2 credits):

The elective will consist of reviewing gross and microscopic pathology specimens with attending pathologists, attending and participating in multidisciplinary conferences, observing the operation of the clinical and histologic laboratories, participating in autopsy pathology, and correlating pathologic diagnoses with patient management using principles of evidence-based medicine. The medical student will review the patient's clinical history, physical exam, laboratory data, and radiologic studies and correlate the relevant information with gross and microscopic findings of patient specimens. From this information the medical student will develop a differential diagnosis, plan the diagnostic evaluation and relate the final pathologic diagnosis to patient outcome, based on sound anatomic pathology and laboratory medicine principles.

Prerequisite(s): Years 1, 2 + 9813, 9815, 9816, or 9819

Co-requisite(s): None

Duration: 2 weeks

Emergency Medicine

VT Course Number	VTCOSM Course Number	Transcribed Course Title
9101	MED 901A	Clinical Decision Making
9102	MED 901B	Emergency Ultrasound
9103	MED 901C	Pre-Hospital Medicine
9104	MED 901D	Pediatric Emergency Medicine
9105	MED 901E	Acting Internship in Emergency Medicine
9106	MED 901F	Wilderness Medicine
9107	MED 901H	Introduction to Emergency Medicine
9108	MED 901I	Evidence Based Medicine
9109	MED 901J	Rural Emergency Medicine
9110	MED 901K	A Standard in Wilderness Medicine Education

9101/MED 901A. Elective - Clinical Decision-Making (2 credits):

How do we make decisions? What thought processes occur when a physician assimilates multiple pieces of information to arrive at a plan of action, a diagnosis, or a treatment modality? What are sources of error in our thought processes, and how can we learn to overcome them to be more effective decision makers? This four-week elective will consist of several readings, discussions, and direct observation of physician decision-making in the Emergency Department setting. The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2

Co-requisite(s): None

Duration: 2 weeks

9102/MED 901B. Elective - Emergency Ultrasound (2 credits):

This two-week elective will consist of learning to perform basic limited point-of-care ultrasound examinations on patients who are in the emergency department at Carilion Roanoke Memorial Hospital. The medical student will perform bedside ultrasounds under supervision and create a portfolio of studies and interesting cases that were performed. From these studies, the medical student will develop an understanding of ultrasound physics, learn standard ED scan protocols, and learn to interpret positive and negative findings in real time. The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

9103/MED 901C. Elective - Pre-Hospital Medicine (2 credits):

The elective will consist of didactics and observational ride-along shifts with EMS units in the Roanoke area. The medical student will receive education in the principles of prehospital medicine, including capabilities, limitations, skill levels, and costs associated with prehospital transportation methods. Over the course of two weeks, the student will receive several hours of didactic education as well as participate in 6-8 shifts with EMS and fire units in the city. The locations are Carilion Roanoke Memorial Hospital and area EMS services.

Prerequisite(s): Years 1, 2

Co-requisite(s): None

Duration: 2 weeks

9104/MED 901D. Elective - Pediatric Emergency Medicine (2 or 4 credits):

The four-week elective will consist of shifts in the Pediatric Emergency Department at Carilion Roanoke Memorial Hospital. The medical student will do the patient's chart review, history taking, and physical examination. From this information the medical student will develop a differential diagnosis, plan the diagnostic evaluation and design the acute management of the patient. The medical student will then observe and/or participate in the medical care and procedures that make up the patient's management plan. Emphasis will be placed on age-appropriate exam techniques and treatment modalities for acutely ill and injured children. This elective is meant to be an intensive clinical experience in Pediatric Emergency Medicine.

Prerequisite(s): Years 1, 2, 9813, 9815, 9816 + 9819

Co-requisite(s): None

Duration: 2 or 4 weeks

9105/MED 901E. Elective - Acting Internship in Emergency Medicine (4 credits):

The four-week Acting Internship (AI) in Emergency Medicine is meant to complement an EM clerkship. While it is not required, it is recommended that students have had a prior clerkship experience to gain the baseline fund of knowledge. The AI is meant to serve as a month long "interview" rotation, and therefore students are expected to have an interest in pursuing a career in Emergency Medicine with Carilion Roanoke Memorial Hospital as a possible residency destination. Students will work a schedule similar to that of an intern in our Emergency Medicine residency in the ED at CRMH. Students will be responsible for initial patient assessment, presentation to attending physicians, as well as developing independent management plans. Focus will be on multi-tasking skills and development of plans of care appropriate for the student's educational level. Opportunities will exist for students to gain extra exposure to an area of interest (ultrasound, prehospital, tactical, wilderness medicine, academic/educational development) and students are encouraged to contact us ahead of time to allow time to arrange these experiences.

Prerequisite(s): Years 1, 2 + 9811

Co-requisite(s): None

Duration: 4 weeks

9106/MED 901F. Elective - Wilderness Medicine (2 credits)

This elective will be an immersive experience in Wilderness Medicine. Over the course of the two weeks the students will develop the skills and knowledge necessary to practice medicine in an austere environment. They will also learn the skills necessary to survive in such environments and the means by which they can bring patients to definitive care. Their experience will include small group learning, hands-on work stations, and immersive trips to the outdoors.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

9107/MED 901H. Elective – Introduction to Emergency Medicine (2 credits)

The Emergency Department is a unique environment in the hospital. Unselected patients with undifferentiated chief complaints arrive to the ED with no appointments. ED physicians need to rapidly triage, stabilize, rule in and rule out diagnoses, and determine appropriate destination for further workup or definitive treatment. This elective is designed for the student who is interested in Emergency Medicine as a career and needs earlier exposure to EM. (Example- Student has changed career choice and did not complete EM clerkship in M3 year). Acceptance to the elective is based on application directly to the Emergency Medicine Clerkship Director.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): none

Duration: 2 weeks

9108/MED 901I. Elective – Evidence Based Medicine (2 credits)

Why did we order that test? What is the evidence for ordering a CBC on a patient with belly pain? Why would you reflexively order a CT scan on a patient older than 65 with new onset abdominal pain? These questions and many others will be answered as you search for the primary literature for support of medical decisions made in the Emergency Department. This two-week elective will consist of several readings, discussions, and direct observation of physician decision-making in the Emergency Department setting.

Prerequisite(s): Years 1, 2

Co-requisite(s): none

Duration: 2 weeks

9109/MED 901J. Elective – Rural Emergency Medicine (2 credits)

To introduce medical students to a more rural population of individuals with a wide variety of Emergency Department presentations, as well as, to become familiar with a different hospital system in this more rural setting. It will be expected that the medical students will further develop their skills of history taking, physical examination, critical thinking and knowledge of emergency room medicine, including pharmacology, while becoming competent and confident in the diagnosis and management of these issues. This elective is to assist the student in understanding the type of care that can be offered in a rural setting. More specifically, the student will see the contrast in the rural and urban setting in managing patients in terms of onsite specialists, onsite medical equipment, and onsite ancillary services. The student will learn that these limited resources may determine the need to transfer the patient to a higher level of care in an urban medical center where their core Emergency Medicine clerkship has been completed.

Prerequisite(s): Years 1, 2+ 9811

Co-requisite(s): none

Duration: 2 weeks

9110/MED 901K. Elective – A Standard in Wilderness Medicine Education (4 credits)

This elective will be an immersive residential experience in Wilderness Medicine. This elective will be a four-week elective offered once a year in February. Over the course of the four weeks the students will develop the skills and knowledge necessary to practice medicine in an austere environment. They will also learn the skills necessary to survive in such environments and the means by which they can bring patients to definitive care. Their experience will include small group learning, hands-on work stations, and immersive trips to the outdoors. Students will be eligible for Wilderness First Responder Certification at the completion of the course. The course will be taught by nationally known wilderness medicine faculty.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

Family Medicine

VT Course Number	VTCSOM Course Number	Transcribed Course Title
9201	MED 902A	Inpatient Geriatric Medicine
9202	MED 902B	Nursing Home Medicine
9204	MED 902D	Rural Family Medicine
9205	MED 902F	Student Health
9206	MED 902G	Acting Internship in Family Medicine
9207	MED 902H	Functional Medicine
9208	MED 902I	Acting Internship in Family Medicine – Inpatient and Outpatient

9201/MED 902A. Elective - Inpatient Geriatric Medicine (2 or 4 credits):

The elective will consist of consulting on patients in CRMH. The medical student will do the patient's chart review, history taking, and physical examination. From this information the medical student will develop a differential diagnosis, plan the diagnostic evaluation and design the geriatric management of the patient, based on sound geriatric principles. The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9812

Co-requisite(s): None

Duration: 2 or 4 weeks

9202/MED 902B. Elective - Nursing Home Medicine (2 or 4 credits):

The elective will consist of following patients in a local nursing home. The medical student will do the patient's chart review, history taking, and physical examination. From this information the medical student will develop a differential diagnosis, plan the diagnostic evaluation and design the geriatric management of the patient, based on sound geriatric principles. The location is a local nursing home.

Prerequisite(s): Years 1, 2 + 9812

Co-requisite(s): None

Duration: 2 or 4 weeks

9204/MED 902D. Elective - Rural Family Medicine (4 credits):

The overall goal of this course is to immerse students in primary care as practiced in a setting distant from immediate access to a tertiary care center. The location is in an outpatient practice. The focus is on the following themes:

- Development of autonomy dealing with common and serious conditions in rural primary care
- Exploration of roles played by physicians in the community
- Service learning particularly as applied to rural underserved care
- Understanding referral and consultation relationships in a rural environment

Prerequisite(s): Years 1, 2 + 9812

Co-requisite(s): None

Duration: 4 weeks

9205/MED 902F. Elective - Student Health (2 or 4 credits):

The overall goal of this course is to expose students to primary care as practiced in a student health setting. The location is at Radford University and is available while the university is in session from August-May. The focus is on the following themes:

- Development of autonomy dealing with common and serious conditions in a student health setting
- Exploration of roles played by physicians in the community
- Understanding the unique challenges and issues associated with caring for a student population

Prerequisite(s): Years 1, 2 + 9812

Co-requisite(s): None

Duration: 2 or 4 weeks

9206/MED 902G. Elective - Acting Internship in Family Medicine (4 credits):

The Acting Internship in Family Medicine is designed to engage fourth-year medical students in learning a high level of responsibility for primary, inpatient care from a unique Family Medicine approach. The student will understand the family physician's role in the hospital setting. Other opportunities for student learning may include: assisting with or performing, under supervision, simple procedures; participating in the evaluation of patients in the emergency room under the supervision of an upper level resident; working in the antepartum service, labor & delivery, the obstetrical wards, as these areas relate to family medicine training. The preceptor is the Family Medicine inpatient attending and the location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9207/MED 902H. Elective - Functional Medicine (2 credits):

The elective will consist of two weeks of consulting on patients in different clinical, exercise, and consultative settings. While learning evidence-based practices of helping individuals and families adopt and sustain healthy behaviors that affect health and quality of life, the medical student will also be challenged to create a personal two-week plan for lifestyle modification based upon results of an initial panel of lifestyle questionnaires and an initial evaluation of physical and nutritional fitness. This two-week elective will not be offered in the last two weeks of May, the last two weeks of August, the last two weeks of November, or the last two weeks of December. The location is at several outpatient sites.

Prerequisite(s): Years 1, 2

Co-requisite(s): None

Duration: 2 weeks

9208/MED 902I. Elective – Acting Internship in Family Medicine – Inpatient and Outpatient (4 credits):

The Acting Internship in Family Medicine is designed to engage fourth-year medical students in learning a high level of responsibility for primary, inpatient and outpatient care from a unique Family Medicine approach and understand the family physician's role in the hospital and ambulatory setting. Other opportunities for student learning may include: assisting with or performing, under supervision, simple procedures; participating in the evaluation of patients in the emergency room under the supervision of an upper level resident; working in the antepartum service, labor & delivery, the obstetrical wards, as these areas relate to family medicine training. Also, the student may work in the pediatric wards, the newborn nursery, and the intensive care unit, as these are all areas where the Family Medicine service cares for patients in the hospital.

Prerequisite(s): Years 1, 2

Co-requisite(s): None

Duration: 4 weeks

Internal Medicine

VT Course Number	VTCSOM Course Number	Transcribed Course Title
9301	MED 903A	Clinical Infectious Diseases
9302	MED 903B	Cardiology Consults
9303	MED 903C	Rheumatology
9304	MED 903D	Physical Medicine and Rehabilitation
9306	MED 903F	Pulmonary Medicine
9307	MED 903G	Ambulatory Internal Medicine
9308	MED 903H	Palliative Medicine
9309	MED 903I	Acting Internship in Internal Medicine
9310	MED 903J	Acting Internship in Cardiology
9311	MED 903K	CCU
9312	MED 903L	Dermatology
9313	MED 903M	Gastroenterology
9314	MED 903N	Hematology/Oncology
9315	MED 903O	Medical ICU
9316	MED 903P	Nephrology
9317	MED 903Q	Occupational Medicine
9318	MED 903S	Advanced Physical Medicine and Rehabilitation
9319	MED 903T	Advanced Dermatology
9320	MED 903U	Hospice
9321	MED 908B	Radiation Oncology

9301/MED 903A. Elective - Clinical Infectious Diseases (4 credits):

The elective will consist of consulting on patients with infections who are hospitalized at Carilion Roanoke Memorial Hospital. The medical student will do the patient's chart review, history taking, and physical examination. From this information the medical student will develop a differential diagnosis, plan the diagnostic evaluation and design the infectious disease management of the patient, based on sound microbiological, antibiotic and physiological principles. The preceptor is the attending on the inpatient service and the location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9813

Co-requisite(s): None

Duration: 4 weeks

9302/MED 903B. Elective – Cardiology Consults (2 or 4 credits):

The Cardiology Consult elective will give the medical student an introduction in rendering consultative advice on a wide variety of cardiovascular issues in a hospital setting. Typical patients will include preoperative clearance for non-cardiac surgeries, post-operative complications including arrhythmias and hemodynamic instability, or patients with acute coronary syndromes, heart failure or other cardiovascular issues admitted to non-cardiology services. The medical student will perform complete reviews of patients' electronic medical records, take an independent history, and perform a complete physical examination. From this information the medical student will develop a differential diagnosis, plan the diagnostic studies including laboratory tests and imaging studies and design the cardiovascular management plan for the patient. The medical student will be part of the rounding team that will include the attending, cardiology fellow, and often one or more medical residents. The medical student will review his/her management plan with the fellow and/or resident before presenting it to the attending. The preceptor is the attending on the inpatient service and the location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9813

Co-requisite(s): None

Duration: 2 or 4 weeks

9303/MED 903C. Elective - Rheumatology (2 or 4 credits):

The elective will consist of consulting on patients with a focus on outpatient care. While there may be an occasional inpatient consultation the majority of experience will be in the evaluation and treatment of musculoskeletal problems and rheumatologic diseases in the outpatient setting. The medical student will evaluate the patient with chart review, complete history, and physical examination and documentation in EPIC. From this information the medical student will develop a differential diagnosis, plan the diagnostic evaluation and be able to outline treatments for the common mechanical and degenerative and inflammatory musculoskeletal problems and rheumatologic diseases. The locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2

Co-requisite(s): None

Duration: 2 or 4 weeks

9304/MED 903D. Elective - Physical Medicine and Rehabilitation (2 or 4 credits):

Students will learn how to assist individuals who have permanent impairments (paralysis, sensory loss, cognitive dysfunction, alteration of consciousness, decreased endurance, etc.) in identifying their remaining abilities and developing them to their maximum potential. There is a strong emphasis on the team approach, with communication as the vital link between team members, most importantly the patient and the patient's family. We will try to focus on issues that the students will be likely to see in their primary practices. The location is the rehab unit at Carilion Roanoke Community Hospital.

Prerequisite(s): Years 1, 2

Co-requisite(s): None

Duration: 2 or 4 weeks

9306/MED 903F. Elective - Pulmonary Medicine (2 or 4 credits):

The course consists of consulting on patients with pulmonary diseases who are hospitalized at Carilion Roanoke Memorial Hospital and evaluating patients with pulmonary diseases in the outpatient clinic. The medical student will do the patient's chart review, history taking, and physical examination. From this information and the integration of physiopathological principles, the medical student will develop a differential diagnosis, learn how to prioritize this, and propose a treatment plan. The preceptor is the inpatient attending and the locations are the outpatient office and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9813

Co-requisite(s): None

Duration: 2 or 4 weeks

9307/MED 903G. Elective - Ambulatory Internal Medicine (2 or 4 credits):

Students will be paired with a faculty member in Internal Medicine and see patients at Carilion Clinic Internal Medicine-Riverside. Students will be exposed to a wide array of patients with diseases and conditions typically seen in an outpatient Internal Medicine setting, such as, diabetes, hypertension, and chronic lung disease. Students will learn to do a focused history and physical exam pertinent to the patient's reason for being seen. Students will then report their findings to the attending physician and together formulate a management plan for the patient. The preceptor is the ambulatory faculty attending and the location is the outpatient clinic.

Prerequisite(s): Years 1, 2

Co-requisite(s): None

Duration: 2 or 4 weeks

9308/MED 903H. Elective - Palliative Medicine (2 or 4 credits):

The elective will consist of consulting on patients with serious illnesses who are hospitalized at Carilion Roanoke Memorial Hospital. The medical student will do the patient's chart review, history taking, and physical examination. From this information the medical student will be able to synthesize information to develop an interdisciplinary plan of care incorporating palliative care principles for the patient and family that address comprehensive views of suffering. The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9813

Co-requisite(s): None

Duration: 2 or 4 weeks

9309/MED 903I. Elective - Acting Internship in Internal Medicine (4 credits):

The Internal Medicine Acting Internship (AI) rotation seeks to provide the senior medical student an inpatient learning experience similar to that of a PGY1 internal medicine resident. The student will be assigned to an inpatient faculty Internal Medicine teaching team comprised of an attending physician, a PGY2 or PGY3 resident, 2 PGY1 residents, and possibly 1 or 2 other medical students. The student will be assigned patients admitted to their team and will assume an integral role in providing care for that patient during their hospitalization. The student on the AI rotation will be assigned duties and responsibilities very similar to those of the PGY1 residents. These duties include but are not limited to taking a complete history and performing a complete physical on the patients assigned to them, initiating appropriate orders on their patients, which will require co-signature, following the patient throughout their hospitalization, and assisting with discharge planning. The AI student may also be involved in procedures on their patients when indicated. The student will be expected to be on call when their team is on call, including overnight call similar to other PGY1 residents (presently 1 in 8) as well as follow all duty hour rules of the program. The student will also be expected to participate in teaching activities including contributions to teaching rounds and morning report. The student will be expected to attend the didactic conferences provided to the students and residents. The preceptor is the inpatient attending and the location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9310/MED 903J. Elective - Acting Internship in Cardiology (4 credits):

The fourth-year medical student who takes this elective will be immersed in a busy inpatient cardiology service with exposure to a wide spectrum of cardiovascular diseases including acute coronary syndromes, valvular heart diseases, cardiomyopathies and common dysrhythmias. He/she will also help manage an outpatient cardiology observation unit. Most patients in the observation unit will be low-risk patients with chest pain or those with heart failure exacerbations. Chest pain patients will be ruled out for myocardial necrosis, then undergo appropriate non-invasive studies such as exercise treadmill testing, exercise or dobutamine stress echocardiography, nuclear cardiology study (e.g. Lexiscan), or cardiac computed tomographic angiography study. The Acting Intern (AI) will be involved in deciding the most appropriate non-invasive/imaging modality for the patient as well as participate in analyzing the ECG and imaging aspects of the study. Patients with heart failure will be investigated for etiology of HF exacerbation and have appropriate diagnostic studies and adjustment of medical regimens. Some of the patients from the observation unit will be admitted to the AI's inpatient service. The AI will work closely with the attending, a mid-level provider and with an intern. On most rotations, a cardiology fellow will also be involved in teaching the AI and intern. The preceptor is the inpatient attending and the location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9311/MED 903K. Elective - CCU (2 or 4 credits):

The CCU provides intensive care for a wide range of cardiovascular issues. The student will be exposed to unstable acute coronary syndromes, cardiogenic shock, decompensated heart failure, unstable rhythms, hypothermia protocol, and many other unstable cardiac conditions requiring intensive care. The rotation occurs in the Coronary Care Unit of Carilion Roanoke Memorial Hospital and the student will work with the CCU team to provide care for the patients in the unit. The student will participate in cardiac catheterizations and other procedures as warranted. The preceptor is the CCU faculty attending.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 or 4 weeks

9312/MED 903L. Elective - Dermatology (2 or 4 credits):

The elective will consist of Dermatology outpatient clinics at Carilion Riverside complex and consults at Carilion Roanoke Memorial Hospital. The medical student will do the patient's chart review, history taking, and physical examination. In consultation with the attending, the student will develop a differential diagnosis, plan the diagnostic evaluation and design a management plan for the patient's skin disease. The locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 9813 + 9819

Co-requisite(s): None

Duration: 2 or 4 weeks

9313/MED 903M. Elective - Gastroenterology (2 or 4 credits):

Students will work with faculty from the Department of Gastroenterology in the outpatient clinic at Carilion Riverside 3 and will assist with consults on hospitalized patients at Carilion Roanoke Memorial Hospital. Additionally, students will attend procedures in the endoscopy suite. Students will be exposed to a wide array of common and unusual gastrointestinal conditions. The medical student will review the patient's chart, obtain a pertinent history, and perform an appropriate physical examination. In consultation with the attending, the student will develop a differential diagnosis, plan the diagnostic evaluation and design management options for the patient's gastrointestinal disease.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 or 4 weeks

9314/MED 903N. Elective – Hematology/Oncology (2 or 4 credits):

The elective will consist of working primarily in the outpatient setting in conjunction with the faculty hematologist/oncologist. The medical student will do the patient's chart review, history taking, and physical examination. From this information the medical student will develop a differential diagnosis, plan the diagnostic evaluation and discuss the patient management with the attending. The location is Blue Ridge Cancer Care.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 or 4 weeks

9315/MED 903O. Elective - Medical ICU (2 or 4 credits):

This elective is intended to expose medical students to a wide variety of acute and sub-acute medical pathologies and to enable them to provide physiologic support for patients who have suffered acute catastrophic insult. Students will gain experience in coordinating the management of critically ill patients with multiple health care providers and will apply evidence-based concepts to diagnosis, care, and outcome prediction of critically ill patients. The preceptor is the ICU attending and the location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 or 4 weeks

9316/MED 903P. Elective - Nephrology (2 or 4 credits):

The elective will consist of inpatient/outpatient work in conjunction with the nephrologist. The medical student will learn about fluid management as well as dialysis management and the illnesses that typically accompany renal disease (HTN for example.) The preceptor is the attending of record from Valley Nephrology and the location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 or 4 weeks

9317/MED 903Q. Elective - Occupational Medicine (2 credits):

In the United States the majority of citizens are employed. It is well known that a productive lifestyle is important to the mental and emotional wellbeing of an individual. Persons who suffer from chronic illness or injury that result in unemployment have significantly higher than average rates of drug and alcohol abuse, divorce, suicide and a decrease in life expectancy. The elective will consist of seeing patients in the Carilion Clinic Occupational Medicine Clinic.

Prerequisite(s): Years 1, 2 + 9813

Co-requisite(s): None

Duration: 2 weeks

9318/MED 903S. Elective – Advanced Physical Medicine and Rehabilitation (2 credits):

In this elective, students will learn how to assist individuals who have permanent impairments (paralysis, sensory loss, cognitive dysfunction, alteration of consciousness, decreased endurance, etc.) in identifying their remaining abilities and developing them to their maximum potential. There is a strong emphasis on the team approach, with communication as the vital link between team members, most importantly the patient and the patient's family. We will try to focus on issues that the students will be likely to see in their primary practices. On the Advanced PM&R rotation, the student will be engaged in discharge planning and follow-up planning and is expected in general to have a wider knowledge base of how to care for patients on the service. The student will make an oral presentation to the preceptor on a topic agreed upon by the preceptor and the student. The M4 student will be expected to gain a level of independence on the Advanced PM&R elective that is indicative of their prior experience in a PM&R setting. The location is the rehab unit at Carilion Roanoke Community Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

9319/MED 903T. Elective – Advanced Dermatology (4 credits):

This elective will consist of Dermatology outpatient clinics at Carilion Riverside complex and consults at Carilion Roanoke Memorial Hospital. The medical student will do the patient's chart review, history taking, and physical examination. In consultation with the attending, the student will develop a differential diagnosis, plan the diagnostic evaluation and design a management plan for the patient's skin disease. The student on the Advanced Dermatology rotation will review the literature and make a 15-minute oral presentation to the attending on a relevant topic agreed upon by the attending and the student. The student will be expected to be more actively engaged in diagnosis and treatment planning with skills congruent to having had a previous Dermatology rotation and will be expected to be more involved in the management of procedures in the office setting.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9320/MED 903U. Elective – Hospice (2 credits):

Students will make home visits with home health nurses, a physician, and a nurse practitioner. They will attend the interdisciplinary team rounds on Thursday mornings and will learn the regulations around eligibility for hospice services.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

9321/MED 908B. Elective - Radiation Oncology (2 or 4 credits):

Students will learn the principles of Radiation Oncology as well as communication skills with patients who have been determined to have a malignancy which may be responsive to radiation. Students will also learn interprofessionalism through communication with techs, nursing staff, and possibly oncologists. The location is Blue Ridge Cancer Care.

Prerequisite(s): Years 1, 2 + 9818

Co-requisite(s): None

Duration: 2 or 4 weeks

International

VT Course Number	VTCSOM Course Number	Transcribed Course Title
9G02	MED 910B	Global Health, Mungeli
9G03	MED 910C	Global Health, Kazan State Medical University - Russia
9G04	MED 910D	Global Health, Saint-Lo, France
9G05	MED 910E	Global Health, Korea at Yonsei University, Wonju College of Medicine-Wonju
9G06	MED 910F	Global Health, Pop Wuj, Guatemala
9G07	MED 910G	Global Health, Brazil, Florianópolis
9G08	MED 910H	Global Health, Brazil, Rio de Janeiro, Berkeley Simulation
9G09	MED 910I	Global Health, Taiwan, New Taipei City, Mackay
9G10	MED 910J	Global Health, Taiwan, Kaohsiung City, E-DA/I-SHOU
9G11	MED 910K	Global Health, Taiwan, E-DA/I-SHOU/Mackay
9G12	MED 910L	Global Health, Peru, Trujillo, Medical Electives Network
9G13	MED 910M	Global Health, Poland, Wroclaw, Wroclaw Medical University

9G02/MED 910B. Elective - Global Health, Mungeli (4 credits):

This elective is an international elective in which there is a diverse experience in Surgery, Medicine, and OB-GYN.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9G03/MED 910C. Elective - Global Health, Kazan State Medical University-Russia (4 credits):

The purpose of this four-week elective is to allow the student to broaden their medical knowledge through observing or/and assisting doctors in clinics and to get acquainted with healthcare in Kazan. The student will have an opportunity to participate in the longitudinal care of patients, review images and lab studies, learn and practice basic surgical technique. There will also be the opportunity to learn about Global Health, healthcare disparities, global development, cultural exchanges, international affairs, and medical education and in the culture of Russia. There may also be the opportunity to work in the Clinical Skills Center and with standardized patients.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9G04/MED 910D. Elective - Global Health, Saint-Lo, France (4 credits):

The purpose of this four-week elective is to allow the student to broaden their medical knowledge through observing or/and assisting doctors in clinics and to get acquainted with healthcare in Saint-Lô, France. The Memorial Hospital of Saint-Lô has paved the way for modern hospitals since WWII. When it opened in May 1956, it was commonly referred to by experts as "the most modern hospital in France or in Europe" and it still strives to be so. The hospital was built and is still partially funded by money from the USA, as part of reparations as a result of accidental friendly fire on the city during the D-Day invasion. The student may have the opportunity to rotate through general medical units or specific subspecialty practices. Students are expected to participate in Grand Rounds and other educational programs related to their rotation. There are opportunities with the nursing school for interprofessional rounds and training. The student will have an opportunity to participate in the longitudinal care of patients, review images and lab studies, learn and practice basic surgical technique. There will also be the opportunity to learn about Global Health, healthcare disparities, global development, cultural exchanges, international affairs, and medical education and in the culture of France.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9G05/MED 910E. Elective - Global Health, Korea at Yonsei University, Wonju College of Medicine-Wonju (4 credits):

The purpose of this four-week elective is to allow the student to broaden their medical knowledge through observing or/and assisting doctors in clinics and to get acquainted with healthcare in Wonju, South Korea. Composed of a premedical school, medical school, nursing school, and school of dental hygiene, the Wonju College of Medicine emphasizes Christian-based medical education. The school has 147 full-time faculty members and affiliates with Wonju Christian Hospital, a partnership that enables students to have early clinical training. The student will have an opportunity to participate in the longitudinal care of patients, review images and lab studies, learn and practice basic surgical technique. There will also be the opportunity to learn about Global Health, healthcare disparities, global development, cultural exchanges, international affairs, and medical education and in the culture of Korea. There are other health professional schools on campus so opportunity exists for interprofessional rounds and training. There are likely to be other international medical students on campus.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9G06/MED 910F. Elective - Global Health, Pop Wuj, Guatemala (2 or 4 credits):

The purpose of this elective is to allow the student to broaden their medical knowledge through intensive one-to-one Spanish instruction in Guatemala. Since June 2002, Pop Wuj has offered a Medical Spanish Program for medical students, providers, public health professionals, and other healthcare practitioners. The Medical Spanish Program provides health and medical education as well as clinical experience in Guatemala. One of the most important goals of Pop Wuj's Medical Spanish Program is to increase students' cultural competency in addition to their Spanish language skills. To deliver healthcare in a compassionate way, with the knowledge of the culture and history of the population one works with, is an essential value to Pop Wuj's vision of the Medical Spanish Program.

Prerequisite(s): Years 1, 2, 3 + must have some Spanish language proficiency

Co-requisite(s): None

Duration: 2 or 4 weeks

9G07/MED 910G. Elective - Global Health, Brazil, Florianópolis (4 credits):

The purpose of this four-week clerkship is to allow the student to broaden their medical knowledge through observing and/or assisting doctors and other healthcare professionals in outpatient and inpatient settings in Brazil. This elective will also provide an opportunity to learn about Global Health, healthcare disparities, global development, cultural exchanges, international affairs, and medical education in the culture of Brazil. It is expected that students will spend 3-4 weeks with the University of Southern Catarina (UNISUL) located in Santa Catarina state, which includes Florianopolis, a sister city of Roanoke. The rotation will be tailored to the student's needs, but offers a great opportunity to explore healthcare disparities and funding in challenging times within the Brazilian Health Care System. More information can be found at: www.unisul.br.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9G08/MED 910H. Elective - Global Health, Brazil, Rio de Janeiro, Berkeley Simulation (2 credits):

The purpose of this two-week elective is to allow the student to broaden their medical knowledge through observing and/or assisting doctors and other healthcare professionals in simulation trainings and curriculum design for interprofessional healthcare professionals from throughout Brazil. This elective will also provide an opportunity to learn about Global Health, healthcare disparities, global development, cultural exchanges, international affairs, systems of health care and medical education in the culture of Brazil. The elective can be done in conjunction with the four-week elective for Florianopolis, Brazil.

The two-week rotation in Rio de Janeiro involves working and observing at the Berkeley Institute for Simulation where VTC School of Medicine has an MOU and designated faculty. This center provides healthcare simulation to a variety of professionals and students involved in EMS and the provision of health services. This elective would be tailored based on dates and curricular schedule at the center. In addition there is a company, IBKL, associated with the institute that health care companies engage with to meet their individual academic needs through simulation modules. The VTC SOM student will have an opportunity to observe the business side of simulations centers as well as the academic delivery of simulations to various health care professionals throughout Brazil. More information can be found at:

www.berkeley.com.br or www.ibkl.com.br

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

9G09/MED 910I. Elective - Global Health, Taiwan, New Taipei City, Mackay (4 credits):

The purpose of this four-week clerkship is to allow the student to broaden their medical knowledge through observing and/or assisting doctors and other healthcare professionals in outpatient and inpatient settings in Taiwan. This elective will also provide an opportunity to learn about Global Health, healthcare disparities, global development, cultural exchanges, international affairs, and medical education in the culture of Taiwan. It is expected that students will spend four weeks within various clinical rotations at MacKay Memorial Hospital or a nearby affiliate. These hospitals and clinics are part of the MacKay Medical College system. The rotation will be tailored to the student's needs and offers a variety of clinical experiences in an urban and unique cultural setting. More information can be found at:

<http://eng.mmh.org.tw/dnn>.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9G10/MED 910J. Elective - Global Health, Taiwan, Kaohsiung City, E-DA/I-SHOU (4 credits):

The purpose of this four-week clerkship is to allow the student to broaden their medical knowledge through observing and/or assisting doctors and other healthcare professionals in outpatient and inpatient settings in Taiwan. This elective will also provide an opportunity to learn about Global Health, healthcare disparities, global development, cultural exchanges, international affairs, and medical education in the culture of Taiwan. It is expected that students will spend four weeks with E-DA Hospital/I-SHOU University located in Kaohsiung City, Taiwan. The rotation will be tailored to the student's needs and enable them to explore a vibrant and integrated Chinese medical school and clinic on site at E-DA hospital. It also offers the unique opportunity to simultaneously complete a four-week course in traditional Chinese medicine at the School of Chinese Medicine, I-Shou University, developed by Professor Tsai, Head of the Department of Chinese Medicine of E-Da Hospital and Honorable Consultant, I-Shou University. More information can be found at: <http://www.edah.org.tw/english/about.asp> and <http://www.isu.edu.tw/en1/>.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9G11/MED 910K. Elective - Global Health, Taiwan, E-DA/I-SHOU/Mackay (4 credits):

The purpose of this four-week clerkship is to allow the student to broaden their medical knowledge through observing and/or assisting doctors and other healthcare professionals at two locations in Taiwan (Kaohsiung and Taipei/New Taipei). This elective will also provide an opportunity to learn about Global Health, healthcare disparities, global development, cultural exchanges, international affairs, and medical education in the culture of Taiwan.

It is expected that students will spend two weeks with E-DA Hospital/I-SHOU University located in Kaohsiung City, Taiwan. The rotation will be tailored to the student's needs and enables to explore a vibrant and integrated Chinese medical school and Clinic on site at E-DA hospital. More information can be found at: <http://www.edah.org.tw/english/about.asp> and <http://www.isu.edu.tw/en1/>.

It is expected that students will spend two weeks within various clinical rotations at MacKay Memorial Hospital or a nearby affiliate. These hospitals and clinics are part of the MacKay Medical College system. The rotation will be tailored to the student's needs and offers a variety of clinical experiences in an urban and unique cultural setting. More information can be found at: <http://eng.mmh.org.tw/dnn>.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9G12/MED 910L. Elective – Global Health, Peru, Trujillo, Medical Electives Network (4 credits):

The purpose of this four-week elective is to allow the student to broaden their medical knowledge through intensive one-to-one Spanish instruction in Peru. Since 2011, Medical Electives Network has offered medical electives, including a CME accredited medical Spanish program, in Trujillo and other sites around Peru. The Medical Electives Network was established to provide health and medical education as well as health care Spanish skills in Peru. Elective rotations take place at both government hospitals and Non-Governmental Organizations(NGO) facilities. Conditions at the hospitals vary according to the resources available. Students will experience health care in a developing country, and see conditions they may not see in the United States.

In addition to their clinical work, students will develop their general and medical Spanish skills. Classes are taught at all levels and beginner Spanish speakers have the option of taking an intensive medical Spanish program, which offers an additional 2 hours each morning for the first week or two before beginning the clinical rotation. This provides an opportunity to build language skills before beginning clinic.

The Medical Electives Network program also provides 2-3 community health fairs per month, where students will spend the day in a public location helping provide free consultations and medical treatment to patients. Community partners for these events include local municipalities, the national police and the prison service. Other outreach opportunities include week-long surgical missions (2-3 per year) and volunteering at an orphanage or senior program. More information can be found at: <https://medical-electives.net/>

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9G13/MED 910M. Elective – Global Health, Poland, Wroclaw, Wroclaw Medical University (4 credits):

The purpose of this four-week elective is to allow the student to broaden their medical knowledge through observing or/and assisting doctors in clinical rotations at Wrocław Medical University, while gaining an enhanced understanding of healthcare in Poland.

The Wrocław Medical University is one of the most renowned public medical schools in Poland. There are two clinical hospitals: The Individual Public Clinical Hospital and the University Clinical Hospital. Both of them have the best quality equipment at their disposal, which allows them to conduct diagnostic and treatment at the highest level. Furthermore, the university oversees the Academic Stomatology Policlinic and the Alzheimer's Centre in Scinawa. The total number of chairs and clinics amounts to 164. Altogether, 1,093 academic professors and teachers work at the Medical University, which currently educates nearly 6,000 students in 10 fields: Medicine, Medicine and Dentistry, Pharmacy, Medical Analysis, Dietetics, Emergency Medicine, Physiotherapy, Nursing, Obstetrics and Public Health.

Wrocław Medical University has 39 international agreements of cooperation signed with other universities abroad. There is a wide exchange of students and teaching staff within the framework of the Socrates/Erasmus program of the European Union, especially with France, Germany, Italy, Sweden, Spain, Netherlands and England.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

Interprofessionalism

VT Course Number	VTCSOM Course Number	Transcribed Course Title
9P01	MED 900 IP-A	Clinical Quality
9P02	MED 900 IP-C	Medical Spanish

9P01/MED 900 IP-A. Elective – Clinical Quality (2 credits):

The purpose of this elective is to provide an introduction to the fundamentals of efforts to ensure the quality and safety of clinical care provided in an inpatient setting. The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

9P02/MED 900 IP-C. Elective – Medical Spanish (2 credits):

Students will learn the Spanish language as used in the clinical setting. This elective is mostly a non-clinical elective and will be in a classroom setting. There will be opportunities to enter the clinical setting with an interpreter who fulfills that clinical need at Carilion Clinic.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

Medical Education

VT Course Number	VTCSOM Course Number	Transcribed Course Title
9M01	MED 900 BS-C	Medical Education

9M01/MED 900 BS-C. Elective - Medical Education (2 credits):

The purpose of this elective is to provide an introduction to the fundamentals of adult learning, an opportunity to apply and improve teaching skills in a medical setting, and preparation as a future physician-educator. The student will learn to effectively facilitate in a small group learning process utilizing the principles of adult learning and skills of effective feedback, review and write cases for education and evaluation, and how to be an **active** member of the medical education team participating in basic curriculum design and development.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

Neurology

VT Course Number	VTC SOM Course Number	Transcribed Course Title
9401	MED 904A	Vascular Neurology
9402	MED 904B	Inpatient Consults
9403	MED 904C	Outpatient Neurology
9404	MED 904D	Acting Internship in Neurology

9401/MED 904A. Elective - Vascular Neurology (2 credits):

Stroke accounts for more than ½ of all neurology inpatient admissions and is the leading cause of neurologic mortality. This elective will provide education in acute stroke treatment, stroke prevention, and stroke diagnosis. The goals are to master current principles of the diagnostic evaluation of patients with cerebrovascular disease, become skilled in the acute treatment of stroke, and acquire proficiency in treatments to prevent stroke. This location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2

Co-requisite(s): None

Duration: 2 weeks

9402/MED 904B. Elective - Inpatient Neurology Consults (2 credits):

This elective will be offered to fourth-year medical students seeking a more extensive exposure to inpatient Neurology. This elective is intended for students interested in intensive care or Hospitalist Medicine, ER, Neurology or Neurosurgery. It deals with inpatients suffering from strokes, metabolic encephalopathies, seizures, and neurologic complications of non-neurologic conditions. In this setting, students will work with faculty attendings to evaluate patients on a busy consult service. Students will present their findings directly to the consult attending who will review the case with them. Appropriate supervision will be provided. There will be time to review the relevant literature prior to presenting these cases. The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

9403/MED 904C. Elective - Outpatient Neurology (2 credits):

This elective will be offered to fourth-year medical students seeking a more extensive exposure to outpatient Neurology. An individualized program will be prepared by the course director to suit the particular interests of each student. The student may choose from a wide variety of neurologic subspecialty experiences including movement disorders, epilepsy, EMG and neuromuscular disease, among others, but will also spend at least 50% of the time seeing general neurology consultations. Outpatient evaluation and management of neurological complaints is often challenging for physicians. Performance of simple exam skills and knowledge of a few clinical principles make it much easier to manage these patients in an efficient and cost effective manner. The location is the outpatient clinic.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

9404/MED 904D. Elective – Acting Internship in Neurology (4 credits):

The Acting Internship in Neurology is designed for fourth-year medical students with a strong interest in Neurology and who intend to pursue residency training in Neurology (or a related discipline including, but not limited to, Neurosurgery or Psychiatry). The goal of this rotation is to give the student an opportunity to take an active role on the Neurology team in both inpatient and outpatient settings. Emphasis will be placed on improving skills in taking a thorough and relevant history, performing complete, as well as problem-focused neurological examinations, ordering diagnostics and formulating treatment plans. The student may also assist residents or attending physicians in procedures, as appropriate. The student will rotate for two weeks on the inpatient consult service to gain experience with a wide breadth of neurological diseases. The student will also rotate for a week each on the stroke team, to increase depth of knowledge in vascular neurology, and in the outpatient clinic, to develop experience with MS, headache, movement disorders, neuromuscular diseases, and epilepsy. Depending on the student's interests and availability of resources, experience in the Epilepsy Monitoring Unit may be arranged.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

Obstetrics and Gynecology

VT Course Number	VTC SOM Course Number	Transcribed Course Title
9501	MED 905A	Reproductive Endocrinology and Infertility
9502	MED 905B	Urogynecology
9503	MED 905C	Acting Internship in Gynecologic Oncology
9504	MED 905D	Maternal Fetal Medicine
9505	MED 905E	OB-GYN Boot Camp
9506	MED 905F	OB-GYN New River Valley

9501/MED 905A. Elective - Reproductive Endocrinology and Infertility (2 credits):

This elective is designed for a student interested in obstetrics and gynecology or primary care with a strong emphasis on women's health. This rotation will expose the student to the evaluation and management of patients with infertility problems, endometriosis, menstrual abnormalities, polycystic ovary syndrome and uterine fibroids. The student will also gain exposure and learn to perform transvaginal ultrasound in infertility and gynecologic patients. This is primarily an outpatient rotation but will include one half day a week in the operating room. The locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9815

Co-requisite(s): None

Duration: 2 weeks

9502/MED 905B. Elective - Urogynecology (2 credits):

This elective is designed for a student interested in obstetrics and gynecology or primary care with a strong emphasis on women's health or a surgical subspecialty. This rotation will expose the student to the evaluation and management of patients with pelvic organ prolapse and urinary incontinence. The student will be involved in the outpatient management of patients with the above conditions. They will become familiar with medical and surgical management options. The student will have an opportunity to participate in fitting pessaries and observing urodynamics and outpatient cystoscopy. At least one day a week will be spent in the operating room and the student will be responsible for following postoperative patients during their hospital stay. Students will also participate in Friday morning didactics with the residents. The locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9815

Co-requisite(s): None

Duration: 2 weeks

9503/MED 905C. Elective - Acting Internship in Gynecologic Oncology (4 credits):

This is a sub-internship elective designed for a student interested in obstetrics and gynecology or a surgical subspecialty. The student will gain experience in the outpatient evaluation of patients with potential gynecologic malignancies. Students will observe and assist with surgical cases including robotic cases. The student will gain an understanding of postoperative management of complicated surgical patients and will round on these patients with the gynecologic oncology team as an acting sub-intern. The student will be expected to present a topic of their choosing to the team at the end of the rotation or participate in an oral exam given by one of the gynecologic oncologists. The fourth-year student will participate in the same didactic curriculum with the residents. There is no call responsibility but the student will be expected to participate in inpatient rounds during 2 of the 4 Saturdays. The locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9504/MED 905D. Elective - Maternal Fetal Medicine (4 credits):

This elective is designed to provide the participating student with exposure to the breadth of high-risk obstetrics. The student will be expected to evaluate and manage high-risk obstetrical patients in the office and hospital setting. In the outpatient setting, the student will participate in genetic counseling sessions, ultrasounds, maternal fetal medicine consults and prenatal visits. The student will interact with the Maternal Fetal Medicine attendings, OB residents, genetic counselors and ultrasound technicians. The student will gain experience with the management of acute and high-risk obstetrical conditions by rounding daily on the antepartum service with the residents and faculty. The student will **not** be participating in intrapartum management during this rotation (not performing vaginal deliveries or cesarean deliveries). The locations are the outpatient office and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9505/MED 905E. Elective - OB-GYN Boot Camp (2 credits):

This elective is designed for the student applying for an OB-GYN residency. Didactic and procedural skills sessions have been designed for office practice, OB, and GYN and are designed to increase a student's readiness for patient care during an OB-GYN residency.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

9506/MED 905F. Elective – OB-GYN New River Valley (4 credits):

The elective is designed to provide an opportunity for the student to gain experience in the ambulatory and hospital setting caring for both obstetrical and gynecologic conditions. The student will be expected to participate in the evaluation and management of common ambulatory gynecologic complaints including, but not limited to, contraception, abnormal uterine bleeding, pelvic pain and well women care. Students will be involved in the preoperative, surgical, and postoperative care of patients with gynecologic conditions requiring minor and major surgery. The student will also participate in the ambulatory and inpatient management of obstetrical patients. They will provide routine prenatal care as well as learn about management of more complex conditions such as gestational diabetes and hypertension in pregnancy. Students will also assist with vaginal and cesarean deliveries and participate in the postpartum care of these patients. This elective is to assist the student in understanding the type of care that can be offered in a rural setting.

Prerequisite(s): Years 1, 2 + first half of year 3 + 9819

Co-requisite(s): None

Duration: 4 weeks

Orthopaedics

VT Course Number	VTC SOM Course Number	Transcribed Course Title
9910	MED 909A	Orthopaedic - 3rd year
9911	MED 909S	Ortho. A, Specialty
9912	MED 909T	Ortho. B, Non-Specialty
9913	MED 909DD	Ortho., ER
9914	MED 909NN	Pediatric Orthopaedic Surgery

9910/MED 909A. Elective - Orthopaedic 3rd Year (2 or 4 credits):

This option is designed for those students wanting to improve their understanding of the spectrum of care required for orthopaedic patients and the concept of continuity of care. The hybrid elective in Orthopaedics/MSK will include at least one day of OR exposure per week with the goal of an integrated understanding of perioperative assessment, rationale of surgical intervention for a specific subset of patients and orthopaedic issues, surgical anatomy, and postoperative management. Exposure to anesthesia principles and acute care pain management are also components of this rotation. The preceptor is an Orthopaedic faculty member and the locations are the orthopaedic outpatient facilities and Carilion Roanoke Memorial Hospital.

Prerequisite(s): **Years 1, 2**

Co-requisite(s): None

Duration: 2 or 4 weeks

9911/MED 909S. Elective - Orthopaedics A, Specialty (2 or 4 credits):

This option is designed for those students considering a career in Orthopaedic Surgery. It is available from July-November only and priority is given to students who have completed an MS3 orthopaedic elective or MS3 orthopaedic surgical selective. It is designed to allow increased exposure to Orthopaedic subspecialties and, more important, one on one faculty interaction. Each four-week block is divided into two-week rotations with students assigned to a single faculty member for each of the two weeks. Students will follow the attending schedule (including on-call when applicable). ALL rotations include a mandatory two-week Trauma/Fx service rotation. Students may select one specific subspecialty rotation. On occasion, one of the two-week blocks may be divided into one-week rotations to increase subspecialty exposure (see below). This option (one-week rotation) will be offered only to students who have done a four-week MS3 orthopaedic elective. The preceptor is an Orthopaedic faculty member and the locations are the orthopedic outpatient facilities and Carilion Roanoke Memorial Hospital.

Prerequisite(s): **Years 1, 2, 3 + MS3 Ortho Selective**

Co-requisite(s): None

Duration: 2 or 4 weeks

9912/MED 909T. Elective – Orthopaedics B, Non-Specialty (2 or 4 credits):

This option is designed for those students considering a career in specialties that will have clinical overlap with orthopaedics and musculoskeletal care. It is available from November-May and previous Orthopaedic elective exposure is not required. It is designed to allow increased exposure to Orthopaedic subspecialties and a large number of Orthopaedic faculty. Each four-week block is divided into two-week rotations with students assigned to a subspecialty for each of the two weeks. Students will be assigned to faculty and office or OR on a day-by-day schedule. While there are no mandatory rotations, time on the Trauma/Fx service rotation is advised. Students may select specific subspecialty rotation(s) and every effort will be made to honor requests. On occasion, one of the two-week blocks may be divided in to one-week rotations to increase subspecialty exposure (see below). Rotation selection and one-week options are dependent on faculty availability and coordination with MS3 rotations. The preceptor is an Orthopaedic faculty member and the locations are the orthopedic outpatient facilities and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 or 4 weeks

9913/MED 909DD. Elective - Orthopaedics-ER (2 or 4 credits):

This Orthopaedic elective is designed for the student who is interested in Primary Care or Emergency Medicine. It is designed to give acute orthopaedic injury exposure to the student who may see this type of injury.

Prerequisite(s): Years 1, 2, 9813 + 9819

Co-requisite(s): None

Duration: 2 or 4 weeks

9914/MED 909NN. Elective – Pediatric Orthopaedic Surgery (2 credits)

This rotation is a two-week elective and will be offered year-round. The Pediatric Orthopaedic Surgery rotation will expose students to common pediatric musculoskeletal pathologies including plicas, bone and soft tissue cysts, pes planus (flat foot), developmental dysplasia of the hip, tendon contractures, and more. Students will spend time in both the clinic and operating room working alongside a fellowship trained pediatric orthopaedic surgeon. Students will have an opportunity to strengthen their history taking and physical exam skills, in addition to their orthopaedic fund of knowledge. Students will be allowed to attend surgeries with the expectation that they have a strong knowledge of the patient's history and the procedure they are undergoing.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

Pediatrics

VT Course Number	VTC SOM Course Number	Transcribed Course Title
9601	MED 906A	Pediatric Endocrinology
9602	MED 906B	Pediatric Cardiology
9603	MED 906C	Pediatric Pulmonary/Allergy
9604	MED 906D	Pediatric Gastroenterology
9605	MED 906E	Acting Internship in Pediatrics
9606	MED 906F	Community Pediatrics
9607	MED 906G	Developmental Pediatrics
9608	MED 906H	Genetics and Genetic Testing
9610	MED 906J	Neonatal ICU
9611	MED 906K	Pediatric Hematology/Oncology
9612	MED 906L	Pediatric ICU
9613	MED 906M	Pediatric Neurology
9614	MED 906N	Genetics/Pediatric Developmental Disorders

9601/MED 906A. Elective - Pediatric Endocrinology (2 or 4 credits):

The elective will be primarily an outpatient experience, evaluating patients presenting for consultation or follow up to the pediatric endocrinology clinic. Students may also participate in inpatient consultations when they are available and educationally relevant. Common problems encountered will include type 1 and type 2 diabetes, obesity and the metabolic syndrome, disorders of the thyroid, pituitary, and adrenal glands, and disorders of growth, puberty, and bone/calcium. The locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9816

Co-requisite(s): None

Duration: 2 or 4 weeks

9602/MED 906B. Elective - Pediatric Cardiology (2 or 4 credits):

The mission of this rotation is to provide an in-depth learning experience in the field of non-invasive Pediatric Cardiology. Emphasis will be placed on outpatient management of children with heart disease. Students will be participating in non-invasive testing for heart disease including electrocardiography, echocardiography, fetal echocardiography, and stress testing. Students will become familiar with the work up and management of pediatric patients with murmurs, chest pain, palpitations, and syncope. Students will evaluate patients with suspected cardiovascular abnormalities with special emphasis on the longitudinal management of patients with congenital heart disease. The students will develop clinical skills in cardiac auscultation and interpretation of pediatric ECGs. Learning environments include the Roanoke Pediatric Cardiology Clinic as well as multiple outlying clinics and inpatient consultation. The students will attend teaching and patient care conferences. The locations are the outpatient clinics and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9816

Co-requisite(s): None

Duration: 2 or 4 weeks

9603/MED 906C. Elective - Pediatric Pulmonary/Allergy (2 or 4 credits):

The students will rotate in the inpatient ward, PICU, NICU, the outpatient clinics and experience the bronchoscopy lab & PFT lab. Rotations will include rounding with the physicians in these areas. In some instances students will examine patients, perform physical examinations and come up with a differential diagnosis and a proposed work up and treatment plan in both an inpatient and outpatient setting. Goals and curriculum components for this elective will be similar to those of the Pediatric residency program. The locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9816

Co-requisite(s): None

Duration: 2 or 4 weeks

9604/MED 906D. Elective - Pediatric Gastroenterology (2 or 4 credits):

The elective rotation is intended to develop the medical student's clinical skills and enhance their fund of knowledge in the evaluation and management of inpatient and outpatient GI, hepatology, and nutrition disorders. The locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9816

Co-requisite(s): None

Duration: 2 or 4 weeks

9605/MED 906E. Elective - Acting Internship in Pediatrics (4 credits):

The elective will consist of caring for patients on the pediatric inpatient service. The fourth-year medical student will work with the pediatric inpatient team in direct patient care of hospitalized patients on the general pediatric inpatient service. The fourth-year medical student will take the history and perform the physical examination at the time of admission. From this information the medical student will develop a differential diagnosis, plan the diagnostic evaluation and design the management of the patient. The medical student will then take primary responsibility of the patient until they are discharged from the hospital. They will be directly supervised by an upper level (PGY2, PGY3) resident and the Pediatric attending physician. The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9606/MED 906F. Elective - Community Pediatrics (2 or 4 credits):

The mission of this rotation is to provide an in-depth learning experience in the setting of a busy outpatient pediatric clinic. This elective will emphasize preventive and anticipatory care as well as sick office care within the setting of a pediatric medical home.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 or 4 weeks

9607/MED 906G. Elective - Developmental Pediatrics (2 credits):

The elective will introduce the medical student to the evaluation and management of special-needs children by participation in the Child Development Clinic. The medical student will share in the patient's chart review, history taking, and physical examination. From this information the medical student will generate a differential diagnosis, plan the diagnostic evaluation, and create a management plan in consultation with the attending physician. The location is the outpatient clinic.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

9608/MED 906H. Elective - Genetics and Genetic Testing (2 or 4 credits):

The elective will consist of consulting on patients with known or suspected genetic disorders. The medical student will do the patient's chart review, history taking, and physical examination. From this information the medical student will generate a differential diagnosis, plan the diagnostic evaluation, and create a management plan. The location is the outpatient clinic.

Prerequisite(s): Years 1, 2, 9813, 9815 + 9816

Co-requisite(s): None

Duration: 2 or 4 weeks

9610/MED 906J. Elective - Neonatal ICU (2 or 4 credits):

General Objectives

- Obtain a broad understanding of the medical problems afflicting infants during the first month of life
- Learn generally applicable principles in the NICU setting

The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 or 4 weeks

9611/MED 906K. Elective - Pediatric Hematology/Oncology (2 credits):

The elective will consist of consulting on patients with hematological and oncological conditions. The medical student will do the patient's chart review, history taking, and physical examination. From this information the medical student will develop a differential diagnosis, plan the diagnostic evaluation and design the management of the patient. The student may observe lumbar punctures and bone marrow tests as scheduled during their rotation. They will also be required to give a 15-minute talk on a topic agreed upon by the attending if on the four-week rotation. The locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2

Co-requisite(s): None

Duration: 2 weeks

9612/MED 906L. Elective - Pediatric ICU (2 or 4 credits):

The students will spend the elective time in the ICU and will have potential exposure to a wide range of illnesses from multiple organ systems. The student will be expected to develop skills in interacting with critically ill children and also with the parents of these children. The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 or 4 weeks

9613/MED 906M. Elective - Pediatric Neurology (2 or 4 credits):

The elective will consist of consulting on patients with the pediatric neurologists. The medical student will do the patient's chart review, history taking, and physical examination. From this information the medical student will develop a differential diagnosis, plan the diagnostic evaluation and design the management of the patient. The student will make a presentation to the preceptor if doing the four-week rotation. The locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9816

Co-requisite(s): None

Duration: 2 or 4 weeks

9614/MED 906N. Elective – Genetics/Pediatric Developmental Disorders (4 credits):

The elective will introduce the medical student to the evaluation and management of special-needs children. The elective consists of alternating outpatient Child Development and Pediatric Genetics Clinic rotations and inpatient Pediatric Genetic consults. The medical student will do the patient's chart review, history taking, and physical examination. From this information the medical student will generate a differential diagnosis, plan the diagnostic evaluation, and create a management plan.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

Psychiatry

VT Course Number	VTCOSM Course Number	Transcripted Course Title
9701	MED 907A	Child and Adolescent Psychiatry - Outpatient
9702	MED 907B	Child and Adolescent Psychiatry - Inpatient
9703	MED 907C	Consultation Liaison Psychiatry
9704	MED 907D	Geriatric Psychiatry
9705	MED 907E	Acting Internship in Psychiatry
9706	MED 907F	Acting Internship in Psychiatry, Catawba
9707	MED 907G	Inpatient Psychiatry, Catawba
9708	MED 907H	Acting Internship in Psychiatry, Veterans Affairs Medical Center
9709	MED 907I	Advanced Outpatient Child and Adolescent Psychiatry

9701/MED 907A. Elective - Child and Adolescent Psychiatry- Outpatient (2 or 4 credits):

The rotation is based in the Psychiatry Department Outpatient Child and Adolescent Clinic. Students will see children between the ages of 5 and 17 under the close supervision of a child psychiatry fellow and board-certified child psychiatrist. Students will also interact with patient family members and caretakers. Some exposure to liaison with public social service agencies will occur. Problems likely to be encountered in this patient population include mood disorders, behavioral dyscontrol disorders, reactive attachment disorders, attention disorders, and learning disabilities. The student will accompany a board-certified child and adolescent psychiatrist during the course of providing outpatient treatment. A child and adolescent fellow may also be involved in the teaching. The student will be able to observe both psychotherapy and pharmacotherapy with the pre-adult patient, as well as the importance of family interactions. The location is Carilion Roanoke Memorial Hospital, Rehabilitation Center.

Prerequisite(s): Years 1, 2 + 9817

Co-requisite(s): None

Duration: 2 or 4 weeks

9702/MED 907B. Elective - Child and Adolescent Psychiatry- Inpatient (2 or 4 credits):

The rotation is based in a 12-bed unit taking children and adolescents between the ages of 5 and 17. The student will function as an integral member of the treatment team including a board-certified child psychiatrist, child psychiatry fellow, general psychiatry resident, psychologist, social worker, and nursing staff. The student will participate in rounds and will meet with patients both in group and individually. Close supervision will be given by the child psychiatry fellow and attending. Problems likely to be encountered in this patient population include mood disorders, substance use disorders, behavioral dyscontrol disorders, reactive attachment disorders, attention disorders, and psychosis. The student will be able to observe both psychotherapy and pharmacotherapy with the pre-adult patient, as well as the importance of family interactions. The location is Carilion Roanoke Memorial Hospital, Rehabilitation Center.

Prerequisite(s): Years 1, 2 & 9817

Co-requisite(s): None

Duration: 2 or 4 weeks

9703/MED 907C. Elective - Consultation Liaison Psychiatry (2 or 4 credits):

The rotation is based primarily at Carilion Medical Center. Patients on medical, surgical and rehabilitation units who are in need of psychiatric care will be seen under the supervision of a board-certified psychosomatic psychiatrist. Age range of this population is 18 to 100. Problems likely to be encountered include mood disorders, psychosis, substance use disorders, adjustment to acute medical problems, delirium, and exaggeration of symptoms. The student will accompany a board-certified psychosomatic psychiatrist during the course of providing inpatient consultation at Carilion Medical Center. A first- or second-year psychiatric resident may also be involved in the teaching. The student will be able to observe how the psychiatrist can usefully contribute to the care of medically or surgically hospitalized individuals. The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Year 1, 2 + 9817

Co-requisite(s): None

Duration: 2 or 4 weeks

9704/MED 907D. Elective - Geriatric Psychiatry (2 or 4 credits):

The student will participate in a wide spectrum of treatments in use for geriatric psychiatry. Most of their time will be spent in an outpatient geriatric medicine and psychiatry clinic with geriatric psychiatry specialists. Some time will be spent going to nursing homes to care for the elderly. Limited exposure to geriatric medical/surgical consultation will occur. Supervision at all venues will be by a board-certified geriatric psychiatrist and to a lesser extent by a geriatric psychiatry fellow. Problems likely to be encountered in this patient population include mood disorders, grief, dementia, end-of-life issues, and adjustment to continuing medical problems. The student will accompany a board-certified geriatric psychiatrist during the course of providing outpatient treatment. A geriatric fellow and/or third- or fourth-year psychiatric resident may also be involved in the teaching. The age range of the patients treated is between 65 and 100 years old. In addition, the student may opt to spend one day going to geriatric nursing homes with a psychiatrist. The student will be able to observe both psychotherapy and pharmacotherapy with the geriatric patient, as well as the importance of family support, variations in physiology and metabolism in the aging individual, and end-of-life issues. The locations are the outpatient office and nursing homes in the Roanoke Valley.

Prerequisite(s): Years 1, 2 + 9817

Co-requisite(s): None

Duration: 2 or 4 weeks

9705/MED 907E. Elective - Acting Internship in Psychiatry (4 credits):

During the AI, the student will work with the assigned attending, resident and students as an active member of the treatment team on the inpatient psychiatry units R4 and R5. The student will be assigned a maximum of 6 patients and will be an active team leader on the treatment team under the supervision of the resident and attending physicians. The location is Carilion Roanoke Memorial Hospital, Rehabilitation Center.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9706/MED 907F. Elective – Acting Internship in Psychiatry, Catawba (4 credits):

During the AI, the student will work with your assigned attending, resident and students as an active member of the treatment team on the inpatient psychiatry units at Catawba Hospital. The student will be assigned a maximum of 6 patients and will be an active team leader on the treatment team under the supervision of the resident and attending physicians.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9707/MED 907G. Elective – Inpatient Psychiatry, Catawba (2 credits):

During the elective, the student will work with your assigned attending, resident and students as an active member of the treatment team on the inpatient psychiatry units at Catawba Hospital. The student will be assigned a maximum of 6 patients and will be an active team leader on the treatment team under the supervision of the resident and attending physicians.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

9708/MED 907H. Elective – Acting Internship in Psychiatry, Veterans Affairs Medical Center (4 credits):

During the AI at the Salem Veterans Affairs Medical Center, the student will work with the assigned attending and resident as an active member of the treatment team on the inpatient psychiatry units. The student will be assigned a maximum of 6 patients and will be an active team leader on the treatment team under the supervision of the resident and attending physicians. Duties will include leading daily treatment team meetings in discussion of your patients, writing notes, making recommendations for the treatment plan, reviewing labs and imaging results, and communicating with consultants.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9709/MED 907I. Elective – Advanced Outpatient Child and Adolescent Psychiatry (2 or 4 credits):

This elective will allow students who have previously completed outpatient child and adolescent psychiatry to experience community psychiatry services offered in the Roanoke Valley in addition to participating in standard outpatient clinics. Students will have the opportunity to work in the community with Carilion providers and experience multiple psychiatric services that are unavailable during the introductory outpatient/inpatient child and adolescent psychiatry rotation. These opportunities include: Pediatric Neurodevelopment Clinic, Community Teen Clinic, Intercept Youth Services, and Roanoke City Department of Social Services evaluation consults. Each student will have the opportunity to customize their learning experience based on individual interests and learning goals. During this rotation, students will be encouraged to take additional responsibility in patient management with emphasis placed on initial diagnosis, pharmacological treatment, and patient disposition following each encounter. At the conclusion of the rotation, students who choose this four-week course are expected to do a 5-10 minute presentation on a topic of personal interest related to child and adolescent psychiatry.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 or 4 weeks

Radiology

VT Course Number	VTC SOM Course Number	Transcribed Course Title
9801	MED 908A	Interventional Radiology
9802	MED 908C	Breast Imaging
9803	MED 908D	Musculoskeletal Radiology
9804	MED 908E	Neuroradiology
9805	MED 908F	Advanced Interventional Radiology
9806	MED 908G	Acting Internship in Interventional Radiology

9801/MED 908A. Elective - Interventional Radiology (2 credits):

The elective will consist of further clinical experience in the subspecialty of Interventional Radiology to include management of conditions in genitourinary, gastrointestinal, vascular, biliary, neurological and oncologic interventions in the spectrum of various clinical conditions. Students will be exposed to daily teaching sessions with interventional radiologists and attend multidisciplinary conferences that incorporate patient management issues. The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + MED 9818

Co-requisite(s): None

Duration: 2 weeks

9802/MED 908C. Elective - Breast Imaging (2 credits):

The elective will consist of further clinical experience in the subspecialty of breast imaging to include the modalities of screening and diagnostic mammography, ultrasound, and Magnetic Resonance Imaging (MRI) in the imaging diagnosis of benign and malignant diseases of the breast. Students will be exposed to daily teaching sessions at the Breast Care Center and attend multidisciplinary conferences that incorporate patient management issues. The location is the Breast Care Center.

Prerequisite(s): Years 1, 2 + 9818

Co-requisite(s): None

Duration: 2 weeks

9803/MED 908D. Elective - Musculoskeletal Radiology (2 credits):

The elective will consist of further clinical experience in the subspecialty of musculoskeletal radiology to include the modalities of Computed Tomography, Magnetic Resonance Imaging (MRI), and arthrography in the imaging diagnosis of musculoskeletal diseases. Students will be exposed to daily teaching sessions with radiologists and attend multidisciplinary conferences that incorporate patient management issues. The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9818

Co-requisite(s): None

Duration: 2 weeks

9804/MED 908E. Elective - Neuroradiology (2 credits):

This two-week elective is for the student with an interest in pursuing a residency in the neurosciences or career in neuroimaging. The intent is to provide an environment that provides the student an opportunity and time to work on a focused project in neuroimaging. This might be a case report, limited research project, preparation of a Grand Rounds topic or adding cases to a teaching file or online database. It is required that the interested student meet with the neuroradiologist several months ahead of time to discuss and choose a project so the elective time can be spent most productively. This is especially important if the project involves the use of resources that may not be immediately available or involves a cooperative effort with other researchers or technical staff. The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9818

Co-requisite(s): None

Duration: 2 weeks

9805/MED 908F. Elective – Advanced Interventional Radiology (2 or 4 credits):

This two-week elective will allow students who have previously completed the Interventional Radiology elective to learn more advanced aspect of interventional radiology including neurointerventional and oncological interventional radiology. Students will observe and gain knowledge in advanced neurointerventional procedures such as acute stroke, intracranial aneurysms, and AV malformations. Students will also observe and gain knowledge in radiofrequency ablation and catheter directed therapies. The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3 + 9801

Co-requisite(s): None

Duration: 2 or 4 weeks

9806/MED 908G. Elective – Acting Internship in Interventional Radiology (4 credits):

This four-week acting internship (AI) in Interventional Radiology (IR) is designed for students applying to residency in Interventional Radiology. The AI is intended to give the prospective IR applicant an understanding of what a rotation will be like in residency. The focus will be on understanding management and appropriateness of procedures rather than simply exposure to the types of procedures IR does. Students will be expected to perform at least 8 jugular venous accesses with ultrasound guidance, 5 paracenteses, prepare the list of procedures for rounds each a.m., and develop procedural skills, including ultrasound guidance with paracentesis, thoracentesis, and vascular access. The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3 + 9801

Co-requisite(s): None

Duration: 4 weeks

Surgery

VT Course Number	VTCOSM Course Number	Transcripted Course Title
9901	MED 909C	Neurosurgery Spine Track
9902	MED 909D	Neurosurgery Ped. Track
9903	MED 909E	Neurosurgery ICU Track
9904	MED 909F	Neurosurgery Operating Room Track
9905	MED 909G	Neurosurgery Research Track
9906	MED 909P	Neurosurgery Consultation Track
9907	MED 909Q	Acting Internship in Neurosurgery
9920	MED 909H	Anesthesia
9921	MED 909BB	Advanced Anesthesiology
9923	MED 909FF	General Surgery/Trauma Night Float
9924	MED 909GG	Acting Internship in Surgical ICU
9925	MED 909HH	Urology
9927	MED 909II	Wound Care
9928	MED 909J	Breast Surgery
9929	MED 909JJ	Acute Care Skills Certificate
9930	MED 909K	Cardiothoracic Surgery
9931	MED 909KK	Oral Health
9932	MED 909L	CNRV General Surgery
9933	MED 909LL	Pediatric Otolaryngology/ENT
9934	MED 909MM	Acting Internship in Emergency General Surgery
9936	MED 909O	Otolaryngology, Head & Neck Surgery-ENT
9937	MED 909OO	Pain Management
9938	MED 909PP	Surgical Readiness
9939	MED 909R	Ophthalmology
9941	MED 909V	Pediatric Surgery
9942	MED 909W	Plastic Surgery
9943	MED 909X	Surgical ICU
9944	MED 909Y	Trauma Surgery
9945	MED 909Z	Roanoke Vascular

9901/MED 909C. Elective - Neurosurgery Spine Track (2 or 4 credits):

Students on this rotation will experience about 40% of the week in the neurosurgery and/or spine center clinic and 60% in the operating room and inpatient floors. The student will gain a deep appreciation for the evaluation and management of degenerative spinal disorders, radiculopathy, myelopathy, spinal column tumors, spinal column fracture, spinal column deformity, chronic spinal pain, scoliosis, and more. Surgical experiences will include the opening and closing of large spinal wounds, pedicle screw placement, laminectomy, fusion, kyphoplasty, and more. Students will participate in Tuesday afternoon academic sessions and will always be welcome on rounds and in the operating room. The locations are the Institute of Orthopaedics and Neurosciences and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9819

Co-requisite(s): None

Duration: 2 or 4 weeks

9902/MED 909D. Elective - Neurosurgery Ped. Track (2 or 4 credits):

In this rotation, students will work closely with two Pediatric Neurosurgery oriented attending surgeons. Students on this rotation will not only learn the nuts and bolts of pediatric neurosurgery but will also gain a deep appreciation for how to relate to critically ill children and their families. This will involve both outpatient clinic work and inpatient evaluations and surgeries. Students will experience patients with disorders such as hydrocephalus, spina bifida, tethered spinal cord, head trauma, spine trauma, brain tumors, non-accidental trauma, chiari malformation, skull masses, craniofacial synostosis and deformity, and more. The pediatric volume of the service is variable and a healthy mix of adult neurosurgery may be mixed into the rotation. Students will participate in Tuesday afternoon academic sessions and will always be welcome on rounds and in the operating room.

Prerequisite(s): Years 1, 2 + 9819

Co-requisite(s): None

Duration: 2 or 4 weeks

9903/MED 909E. Elective - Neurosurgery ICU Track (2 or 4 credits)

Students will spend a lot of time in the Emergency Room evaluating acute neurosurgical issues and interweaving their work with the trauma team. They also will spend time in the ICU setting once the acute situation has been initially identified and evaluated. The preceptor is the Neurosurgical faculty and the location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9819

Co-requisite(s): None

Duration: 2 or 4 weeks

9904/MED 909F. Elective - Neurosurgery OR Track (2 or 4 credits):

For the surgery hound! In this track, students will spend the vast majority of their time in the operating room. They will participate in the daily operating schedule. They will be expected to evaluate the patients and their radiographs in the pre-op area and then discuss the choice and execution of procedures with attending surgeons and residents involved in the procedure. They can anticipate the development of skills in sterile technique, prepping and draping, operative positioning, opening and closing of surgical wounds, control of bleeding, tying, suturing, drain placement, burr hole placement, pedicle screw insertion, laminectomy, ventricular catheter placement, lumbar catheter placement, craniotomy, bone drilling, and more. They will develop an appreciation for the fragility of the nervous system and will develop skills in the delicate manipulation of such tissues. Students will participate in Tuesday afternoon academic sessions and will always be welcome on rounds and in the operating room. The preceptor is the Neurosurgery faculty and the location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9819

Co-requisite(s): None

Duration: 2 or 4 weeks

9905/MED 909G. Elective - Neurosurgery Research Track (2 or 4 credits):

Students on the research track work predominately on on-going projects of the team although we are open to initiating novel proposed projects. They will still participate in Tuesday afternoon academic sessions and will always be welcome on rounds and in the operating room. Students will work with a faculty mentor and a resident mentor/partner. Skills will be built in study design, literature search, data accumulation, synthesis. They will share authorship of finished research projects with team members (posters, presentations, papers). The preceptor will be the chosen faculty member/mentor and the location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9819

Co-requisite(s): None

Duration: 2 or 4 weeks

9906/MED 909P. Elective - Neurosurgery Consultation Track (2 or 4 credits):

Students will spend the majority of their rotation evaluating neurosurgery and spine center outpatients. They will develop an exceptional acumen in neurological history taking, exam, differential diagnosis, synthesis, and treatment planning. They will learn how to efficiently move a number of patients through a clinic. They will develop patient interaction skills. They will develop a strong background in neuroradiologic evaluation. They will gain an in-depth appreciation for the evaluation and management of spinal disorders and also various brain and peripheral nerve disorders. They will partner with attending neurosurgeons and residents each day. They will independently evaluate each of their patients, review the patient's studies, and formulate a diagnosis and treatment plan prior to discussing with their neurosurgical partners. Students will be encouraged to follow their patients through their entire neurosurgical experience including inpatient care and surgery. Students will participate in Tuesday afternoon academic sessions and will always be welcome on rounds and in the operating room. The preceptor is the Neurosurgery faculty attending and the locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9819

Co-requisite(s): None

Duration: 2 or 4 weeks

9907/MED 909Q. Elective - Acting Internship in Neurosurgery (4 credits):

This track is the most demanding and rigorous offered by the Carilion Clinic Neurosurgery team. In this rotation the medical student acts essentially as a neurosurgical intern. They are assigned a palette of inpatients with whom they care for and follow throughout the patients' hospitalizations. They will spend a sizable amount of time in the ICU's, on the floors, and in the operating room. They will write regular notes and will interact intimately with patients and their families. They will take neurosurgical call with a resident one in every four nights. They will participate in Resident Clinic every Tuesday morning. They will gain an appreciation of the full gamut of neurosurgical issues encountered in a busy academic/clinic practice. They will acquire skills in inpatient and outpatient neurosurgical evaluation, the neurologic exam, surgical tissue manipulation, neurological critical care, neuroradiology, patient and family interaction, and much more. The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9920/MED 909H. Elective - Anesthesia (2 or 4 credits):

The goal of the rotation is to provide you, the medical student, a “hands on” exposure to the field of Anesthesia and Anesthesiology and can be taken by a third- or fourth-year student. You will work predominantly with Anesthesiologists, but may also work with Certified Registered Nurse Anesthetists as the month presents itself for scheduling purposes. At the end of the rotation, you should have a basic understanding of the principles of pre-anesthetic evaluation, preparation, and anesthetic care, including history, physical examination, assessment of physiologic state, categorization of anesthetic risk, and care throughout the perioperative period. You will have participated with your anesthesiologist preceptors in placement of monitors, conduction of anesthetics including induction, intubation, maintenance, emergence, extubation and post anesthetic recovery care. You may also have opportunities to gain experience in regional anesthesia and sub-specialty anesthesia areas such as pediatric, obstetric, thoracic, cardiac, and neurosurgical anesthesia. The preceptor is the Anesthesia faculty and the location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2

Co-requisite(s): None

Duration: 2 or 4 weeks

9921/MED 909BB. Elective - Advanced Anesthesiology (2 credits):

The goal of the rotation is to provide you, the medical student, a “hands on” exposure to the field of Anesthesia and Anesthesiology. This is essentially considered as a rotation to build upon your broad knowledge of the third year utilizing knowledge of, for example, fluid balance. You will work predominantly with Anesthesiologists, but may also work with Certified Registered Nurse Anesthetists as the month presents itself for scheduling purposes. At the end of the rotation, you should have a basic understanding of the principles of pre-anesthetic evaluation, preparation, and anesthetic care, including history, preceptors in placement of monitors, conduction of anesthetics including induction, intubation, maintenance, emergence, extubation and post anesthetic recovery care. You may also have opportunities to gain experience in regional anesthesia and sub-specialty anesthesia areas such as pediatric, obstetric, thoracic, cardiac, and neurosurgical anesthesia. The preceptor is the Anesthesia faculty and the location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

9923/MED 909FF. Elective – General Surgery/Trauma Night Float (2 credits):

The purpose of this two-week elective is to allow the student an ability to work with the General Surgery/Trauma services which handle surgical intervention and perioperative patient care. The student will gain not only knowledge/patient care skills but time management skills to offer quality care while managing multiple aspects of patient care. The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

9924/MED 909GG. Elective – Acting Internship in Surgical ICU (4 credits):

The student is expected to participate in daily rounds in the ICU and function as a sub-intern. The student will present assigned patients on rounds, attend all lectures and conferences and read required material. Students will also have the opportunity to do procedures under close supervision. There may be night and weekend call, and on duty hours will follow resident duty hours. Night time duties should be expected. The location is Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9925/MED 909HH. Elective – Urology (2 or 4 credits):

The elective will consist of working both in the outpatient and inpatient settings in conjunction with the faculty urologists. In the outpatient setting, the medical student will do the patient’s chart review, history taking, and physical examination. From this information the medical student will develop a differential diagnosis, plan the diagnostic evaluation and discuss the management with the faculty urologist. In the inpatient setting, the student will be expected to participate in surgical procedures under direct supervision of the faculty physicians. Additionally, the student will have the opportunity to see urologic consults in the inpatient setting. In this case, the student will be expected to do a chart review, obtain the relevant history and data, perform a physical examination, develop a differential diagnosis, and formulate a management plan to discuss with the attending physician.

Prerequisite(s): Years 1, 2, 9819

Co-requisite(s): None

Duration: 4 weeks

9927/MED 909II. Elective – Wound Care (2 or 4 credits)

The purpose of this elective is for students to gain familiarity with the causes of chronic wounds, principles of wound healing, and advanced wound management techniques. The student will gain broad exposure to the field wound care through a busy multidisciplinary wound care service. This should be particularly useful for students interested in any specialty, from primary care to surgical subspecialties. This will be a “hands on” rotation, with bedside interventions involved in the care of most patients, as well as involvement in a uniquely interdisciplinary service. The location is Carilion Roanoke Community Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): none

Duration: 2 or 4 weeks

9928/MED 909J. Elective - Breast Surgery (2 credits):

This two-week elective with the breast service managing patients with benign and malignant breast disease allows the student to gain experience in the management of breast disease with a focus on surgical care in a multidisciplinary patient care setting. The second week of the rotation is spent gaining experience on the plastic and reconstructive aspect of breast patient care. The locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

9929/MED 909JJ. Elective – Acute Care Skills Certificate (2 credits)

This elective consists of a two-week, intensive set of training to prepare graduating medical students for their residencies. Over the course of two weeks, students will obtain certification in Advanced Trauma Life Saving (ATLS), Pediatric Advanced Life Saving (PALS), and Critical Care skills (Fundamental Critical Care Support, FCCS). If time and interest allow, students will also obtain Basic Disaster Life Support training and certification (BDLS).

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): none

Duration: 2 weeks

9930/MED 909K. Elective - Cardiothoracic Surgery (2 or 4 credits):

The student will gain experience in operative and perioperative management of cardiac and thoracic surgical problems. The locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 or 4 weeks

9931/MED 909KK. Elective – Oral Health (2 credits)

The medical students will enhance their diagnostic and clinical skill sets by participating in inpatient, outpatient and operating room care. Such care will focus on total patient management through record review, medical and dental clinical evaluation, assimilation and correlation of information leading to differential diagnoses and treatment. The elective will focus on the clinical application of material learned in years one through three as part of the comprehensive VTCSOM Oral Health / Oral Medicine curriculum.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): none

Duration: 2 weeks

9932/MED 909L. Elective - CNRV General Surgery (2 or 4 credits):

The student will gain experience in surgery as practiced in a smaller community hospital setting with a mix of elective and emergent patient care. The location is Carilion New River Valley Medical Center.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 or 4 weeks

9933/MED 909LL. Elective – Pediatric Otolaryngology/ENT (2 or 4 credits)

The Pediatric Otolaryngology rotation will expose students to common head and neck pathologies including tonsillar and adenoid hypertrophy, otitis media, hearing loss, and airway complications. Students will spend time in the clinic and operating room working alongside a fellowship trained pediatric ENT. Students will have an opportunity to strengthen their history taking and physical exam skills, in addition to their head and neck fund of knowledge. Students will be allowed to attend surgeries with the expectation that they have a strong knowledge of the patient's history and the procedure they are undergoing. The locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): none

Duration: 2 or 4 weeks

9934/MED 909MM. Elective – Acting Internship in Emergency General Surgery (4 credits)

The Acting Internship in Emergency General Surgery is designed for fourth-year medical students with a strong interest in Surgery and who intend to pursue residency training in Surgery. The goal of this rotation is to give the student an opportunity to take an active role on the Emergency General Surgery team. The student will evaluate and recognize patients with emergent surgical conditions, synthesize notes, manage orders, communicate with patients and other healthcare team members, participate in procedures as appropriate to level of training, and see patients in the outpatient setting after emergent surgical care. The locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 4 weeks

9936/MED 9090. Elective - Otolaryngology, Head & Neck Surgery-ENT (2 or 4 credits):

The overall goal of the Otolaryngology elective (specialty clerkship) is to provide medical students preliminary exposure to the specialty of Otolaryngology, Head and Neck Surgery. This includes an introduction to subspecialties within the field such as otology, neurotology, audiology, head and neck surgery, pediatrics, laryngology, allergy, facial plastic and reconstructive surgery, and maxillofacial trauma. The elective will provide medical students with information about the diagnosis and management of disorders of the ear, nose, and throat in an inpatient and outpatient setting. It will also provide exposure to various patient populations with acute and chronic head and neck pathologies. The locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 or 4 weeks

9937/MED 9090O. Elective – Pain Management (2 or 4 credits)

The Pain Management clerkship is a two- or four-week rotation where students explore acute, chronic, and cancer-related pain. Working alongside pain specialists, medical students will round on inpatient pain consults, outpatient chronic pain management, and perioperative acute/regional pain services. They will develop an understanding of both medical and procedural management to pain including nerve block techniques and proper opioid prescribing. Emphasis will be placed on interplay between biopsychosocial aspects to pain and the indications for analgesic therapies.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): none

Duration: 2 or 4 weeks

9938/MED 909PP. Elective – Surgical Readiness (2 credits):

The Surgical Readiness rotation aims to increase students' proficiency with surgical skills and techniques in order to increase confidence when entering the intern year. Students will spend time in the anatomy lab at Jefferson College of Health Sciences and the special projects lab at VTCSOM. Other locations may be utilized as needs arise. Students will have an opportunity to strengthen their suturing and knot tying skills. The course will be tailored to acquiring requisite surgical skills essential to the specialty that interests the student, such as surgical subspecialties, Emergency Medicine or Family Medicine.

Prerequisite(s): Years 1, 2

Co-requisite(s): None

Duration: 2 weeks

9939/MED 909R. Elective - Ophthalmology (2 or 4 credits):

The elective will consist of working in the outpatient setting in conjunction with the faculty ophthalmologist. The medical student will do the patient's chart review, history taking, and physical examination. From this information the medical student will develop a differential diagnosis, plan the diagnostic evaluation and discuss the management with the faculty ophthalmologist. The location is the outpatient office.

Prerequisite(s): Years, 1, 2, 3

Co-requisite(s): None

Duration: 2 or 4 weeks

9941/MED 909V. Elective - Pediatric Surgery (2 or 4 credits):

This two- or four-week rotation will introduce the medical student to common surgical problems seen in the neonate, infant, and younger children. Emphasis will be placed on efficiently working up and treating pyloric stenosis, abdominal pain, necrotizing enterocolitis, intestinal obstruction, and inguinal hernia in this age group. The student will also be introduced to more common congenital problems including abdominal wall defects, head and neck lesions, thoracic masses, and GU and GI tract anomalies. Common pediatric hematologic and oncologic conditions will also be reviewed. The physiology and nutrition of babies and children will also be emphasized as it relates to the surgical care of these patients. Common procedures specific to this age group like venous cut down and airway management will be covered as well. Students will gain experience in the surgical management of common and less common pediatric surgical issues. The locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 or 4 weeks

9942/MED 909W. Elective - Plastic Surgery (2 or 4 credits):

The elective on the Plastic Surgery service affords students the ability to further their development by being involved in the care of both elective and emergent patients who are cared for by the plastic surgeons. This is both an inpatient and outpatient four-week rotation. The locations are the outpatient clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2 + 9819

Co-requisite(s): None

Duration: 2 or 4 weeks

9943/MED 909X. Elective - Surgical ICU (2 credits):

The student is expected to participate in daily rounds in the ICU. The student will present assigned patients on rounds, attend all lectures and conferences and read required material. Students will also have the opportunity to do procedures under close supervision. There will be night duty hours and on duty hours will follow resident duty hours regulations.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

9944/MED 909Y. Elective - Trauma Surgery (2 or 4 credits):

The purpose of this course is to gain familiarity in initial evaluation of trauma patients including trauma alerts and consultations, management of post trauma problems. Activities include: attendance and participation in the assessment and resuscitation of acutely injured patients in the emergency room; call (to be arranged); longitudinal management of selected patients through the emergency department, operating room and intensive care units, to recovery; observation of pre-hospital care by accompanying rescue squads on their calls; and selected readings in resuscitation, critical care and trauma management. The student will participate on the trauma service as a student member of the trauma team. Time for regular attendance at scheduled trauma conferences and individual preceptorial conferences is provided. The locations are the trauma clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 or 4 weeks

9945/MED 909Z. Elective – Roanoke Vascular (2 credits):

Student will gain experience in diagnosis and surgical management of vascular disease and perioperative patient care. The locations are Jefferson Surgical Clinic and Carilion Roanoke Memorial Hospital.

Prerequisite(s): Years 1, 2, 3

Co-requisite(s): None

Duration: 2 weeks

Away Elective

VT Course Number	VTCSOM Course Number	Transcribed Course Title
9999	MED 999	M4 Away Elective

9999/MED 999 Elective - Away Elective (2, 4, or 6 credits) :

This course notates students enrolled in senior away electives at U.S. LCME medical schools and independent academic medical centers that are members of the Council of Teaching Hospitals and Health Systems (COTH).

Prerequisite(s): Year 1, 2, 3 + MCC Approval

Co-prerequisite(s): None

Duration: 2, 4, or 6 weeks

Independent Study

VT Course Number	VTCSOM Course Number	Transcribed Course Title
9002	MED 911	Step 2 Independent Study

9002/MED 911 Elective - Step 2 Preparation Independent Study (2, 4, or 6 credits):

The focus of this elective is to provide structured study time and educational resources for students who have been required to delay their Step 2 examination due to not achieving a target practice test score or for students who have taken and failed the Step 2 examination. Students will create a structured study plan and will work with the Senior Dean for Academic Affairs (or designee) in collaboration with the Senior Dean for Student Affairs and appropriate faculty to implement this independent study plan.

Prerequisite(s): Year 1, 2, 3

Co-prerequisite(s): None

Duration: 2, 4, or 6 weeks

Research

VT Course Number	VTCSOM Course Number	Transcribed Course Title
90RE	MED RES	MED RES Elective

90RE/MED RES. Elective - Research (2 or 4 credits)

This elective is for the student who will be spending time working on their research project. The student will spend time continuing to learn the principles of Research with the mentor in guidance.

Prerequisite(s): Years 1, 2 + the successful passage of the USMLE STEP 1

Co-requisite(s): None

Duration: 2 or 4 weeks

VT/VTC Dual Enrollment Course Descriptions:

Research in Translational Medicine Certificate Program

Year 01 Fall Semester

RTM 5014, Introduction to Biomedical Research (6 credits)

Concepts and elements of biomedical research, including the application of the scientific method, hypothesis generation, the biomedical research continuum (basic, translational, and clinical research), research tools, and biostatistics. Review of medical literature and components of successful interdisciplinary research. Pre: Graduate standing (6H, 6C).

Year 01 Spring Semester

RTM 5024, Translational Science Applications of Biomedical Research (6 credits)

Theory and application of the key concepts and elements of biomedical research, emphasizing the scientific method through the formulation and detailed study of biomedical research questions. Application of biostatistics concepts to an in-depth study of epidemiology and public health. Detailed consideration of biomedical research presentations, primary literature, effective collaboration and scientific misconduct in biomedical research. Pre: 5014 (6H, 6C).

Year 02 Fall Semester

GRAD 5974: Independent Study (6 credits)

Year 02 Spring Semester

GRAD 5904: Project & Report (6 credits)