Radiology Selective

Radiology
Course No. 088 – Radiology

2022-2023

Clerkship Director: Mikhail Higgins
Clerkship Coordinator: Justin Alfonse
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# Medical Education Program Objectives

A BUSM graduate will be able to:

<table>
<thead>
<tr>
<th>INSTITUTIONAL LEARNING OBJECTIVES</th>
<th>MEDICAL EDUCATION PROGRAM OBJECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish and maintain medical knowledge necessary for the care of patients (MK)</td>
<td>MK.1 Describe the normal development, structure, and function of the human body.</td>
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<tr>
<td>MK.2 Recognize that a health condition may exist by differentiating normal physiology from pathophysiologic processes.</td>
<td></td>
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<tr>
<td>MK.3 Describe the risk factors, structural and functional changes, and consequences of biopsychosocial pathology.</td>
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<td>MK.4 Select, justify, and interpret diagnostic tests and imaging.</td>
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<tr>
<td>MK.5 Develop a management plan, incorporating risks and benefits, based on the mechanistic understanding of disease pathogenesis.</td>
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<tr>
<td>MK.6 Articulate the pathophysiologic and pharmacologic rationales for the chosen therapy and expected outcomes.</td>
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<tr>
<td>MK.7 Apply established and emerging principles of science to care for patients and promote health across populations.</td>
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<tr>
<td>MK.8 Demonstrate knowledge of the biological, psychological, sociological, and behavioral changes in patients that are caused by or secondary to health inequities.</td>
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</table>

| Demonstrate clinical skills and diagnostic reasoning needed for patient care (CSDR) | CSDR.1 Gather complete and hypothesis driven histories from patients, families, and electronic health records in an organized manner. |
| CSDR.2 Conduct complete and hypothesis-driven physical exams interpreting abnormalities while maintaining patient comfort. |
| CSDR.3 Develop and justify the differential diagnosis for clinical presentations by using disease and/or condition prevalence, pathophysiology, and pertinent positive and negative clinical findings. |
| CSDR.4 Develop a management plan and provide an appropriate rationale. |
| CSDR.5 Deliver an organized, clear and focused oral presentation. |
| CSDR.6 Document patient encounters accurately, efficiently, and promptly including independent authorship for reporting of information, assessment, and plan. |
| CSDR.7 Perform common procedures safely and correctly, including participating in informed consent, following universal precautions and sterile technique while attending to patient comfort. |
| CSDR.8 Utilize electronic decision support tools and point-of-care resources to use the best available evidence to support and justify clinical reasoning. |
| CSDR.9 Recognize explicit and implicit biases that can lead to diagnostic error and use mitigation strategies to reduce the impact of cognitive biases on decision making. |

| Effectively communicate with patients, families, colleagues and interprofessional team members (C) | C.1 Demonstrate the use of effective communication skills, patient-centered frameworks, and behavioral change techniques to achieve preventative, diagnostic, and therapeutic goals with patients. |
| C.2 Clearly articulate the assessment, diagnostic rationale, and plan to patients and their caregivers. |
| C.3 Effectively counsel and educate patients and their families. |
| C.4 Communicate effectively with colleagues within one’s profession and team, consultants, and other health professionals. |
| C.5 Communicate one’s role and responsibilities clearly to other health professionals. |
A BUSM graduate will be able to:

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<thead>
<tr>
<th>INSTITUTIONAL LEARNING OBJECTIVES</th>
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<tbody>
<tr>
<td>C.6</td>
<td>Demonstrate appropriate use of digital technology, including the EMR and telehealth, to effectively communicate and optimize decision making and treatment with patients, families and health care systems.</td>
</tr>
<tr>
<td>C.7</td>
<td>Practice inclusive and culturally responsive spoken and written communication that helps patients, families, and health care teams ensure equitable patient care.</td>
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<tr>
<td>C.8</td>
<td>Communicate information with patients, families, community members, and health team members with attention to health literacy, avoiding medical jargon and discipline-specific terminology.</td>
</tr>
<tr>
<td>C.9</td>
<td>Communicate effectively with peers and in small groups demonstrating effective teaching and listening skills.</td>
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<tr>
<td>C.6</td>
<td>Demonstrate sensitivity, honesty, compassion, and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.</td>
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<tr>
<td>C.7</td>
<td>Demonstrate humanism, compassion, empathy, integrity, and respect for patients and caregivers.</td>
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<tr>
<td>C.8</td>
<td>Demonstrate a commitment to ethical principles pertaining to autonomy, confidentiality, justice, equity, and informed consent.</td>
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<tr>
<td>C.9</td>
<td>Show responsiveness and accountability to patient needs that supersedes self-interest.</td>
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<tr>
<td>C.9</td>
<td>Explore patient and family understanding of well-being, illness, concerns, values, and goals in order to develop goal-concordant treatment plans across settings of care.</td>
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<tr>
<td>PPD.1</td>
<td>Recognize the need for additional help or supervision and seek it accordingly.</td>
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<tr>
<td>PPD.2</td>
<td>Demonstrate trustworthiness that makes colleagues feel secure when responsible for the care of patients.</td>
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<tr>
<td>PPD.3</td>
<td>Demonstrate awareness of one's own emotions, attitudes, and resilience/wellness strategies for managing stressors and uncertainty inherent to the practice of medicine.</td>
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<tr>
<td>LL.1</td>
<td>Identify strengths, deficiencies, and limits in one’s knowledge and expertise.</td>
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<td>LL.2</td>
<td>Develop goals and strategies to improve performance.</td>
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<tr>
<td>LL.3</td>
<td>Develop and answer questions based on personal learning needs.</td>
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<tr>
<td>LL.4</td>
<td>Actively seek feedback and opportunities to improve one’s knowledge and skills.</td>
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<tr>
<td>LL.5</td>
<td>Locate, appraise, and assimilate evidence from scientific studies related to patients’ health.</td>
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<tr>
<td>LL.6</td>
<td>Actively identify, analyze, and implement new knowledge, guidelines, standards, technologies, or services that have been demonstrated to improve patient outcomes.</td>
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<tr>
<td>HS.1</td>
<td>Identify the many factors that influence health including structural and social determinants, disease prevention, and disability in the population.</td>
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<tr>
<td>HS.2</td>
<td>Apply principles of epidemiological sciences to the identification of health problems, risk factors, treatment strategies, resources, and disease prevention/health promotion efforts for patients and populations.</td>
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<tr>
<td>patients and populations (HS)</td>
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<tr>
<td>HS.3</td>
<td>Demonstrate respect for the unique cultures, values, roles/responsibilities, and expertise of the interprofessional team and the impact these factors can have on health outcomes.</td>
</tr>
<tr>
<td>HS.4</td>
<td>Work with the interprofessional team to coordinate patient care across healthcare systems and address the needs of patients.</td>
</tr>
<tr>
<td>HS.5</td>
<td>Participate in continuous improvement in a clinical setting, utilizing a systematic and team-oriented approach to improve the quality and value of care for patients and populations.</td>
</tr>
<tr>
<td>HS.6</td>
<td>Initiate safety interventions aimed at reducing patient harm.</td>
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<tr>
<td>HS.7</td>
<td>Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care.</td>
</tr>
<tr>
<td>HS.8</td>
<td>Integrate preventive interventions into the comprehensive health care of individuals.</td>
</tr>
<tr>
<td>HS.9</td>
<td>Explain how different health care systems, programs and community organizations affect the health of neighborhoods and communities.</td>
</tr>
</tbody>
</table>

**Exhibit commitment to promoting and advancing health equity for all patients (HE)**

| HE.1                              | Define health equity and describe the individual and population level differences in health outcomes and disease burden due to inequities in health care. |
| HE.2                              | Comprehend the historical and current drivers of structural vulnerability, racism, sexism, oppression, and historical marginalization and how they create health inequity. |
| HE.3                              | Explain how one’s own identity, lived experiences, privileges, and biases influences their perspectives of colleagues, patients and clinical decision making. |
| HE.4                              | Comprehend and identify the impact of health care inequities through medical decision making tools, interpreting medical literature and reviewing scientific research. |
| HE.5                              | Identify factors needed to advocate for a more diverse and equitable healthcare environment at a local, community, and systems based level. |

### Third Year Learning Objectives

During the third-year clerkships, students will

- Demonstrate use of patient-centered interviewing and communication techniques
- Take a clinical history that demonstrates both organization and clinical reasoning
- Perform accurate and relevant physical exam techniques
- Demonstrate an ability to synthesize clinical information and generate a differential diagnosis, assessment and plan
- Demonstrate a compassionate and patient-sensitive approach to history taking and physical examinations
- Communicate well organized, accurate and synthesized oral presentations
- Counsel and educate patients and families
- Demonstrate timely, comprehensive and organized documentation
- Demonstrate a fund of knowledge in the clinical discipline and apply this to patient care
- Demonstrate an awareness of one’s own learning needs and work to address these gaps
- Show respect and empathy for others
• Demonstrate accountability to the responsibilities of the student’s role and expectations of a clinical clerk
• Communicate effectively with the interprofessional team
Radiology Clerkship Learning Objectives

Week 1: Chest Core Didactic Sessions
i. Chest Session 1: At the end of this lecture, Boston University School of Medicine students will be able to:
   1. Describe the relative radiation exposure of a radiograph
   2. Describe and identify the different radiographic views of the chest
   3. Describe a systematic approach to chest x-ray interpretation
   4. Identify and describe mediastinal anatomy
   5. Identify and describe pulmonary lobar anatomy
   6. Identify and describe appropriately positioned and malpositioned support tubes, catheters, and leads.

ii. Chest Session 2: At the end of this lecture, Boston University School of Medicine students will be able to:
   1. Identify and describe the radiographic findings of clinically important thoracic pathology, including pneumonia, CHF, ARDS, pleural effusion, atelectasis, pneumothorax, interstitial lung disease, COPD, TB

iii. Chest Session 3: At the end of this lecture, Boston University School of Medicine students will be able to:
   1. Describe the basic production of a CT image
   2. State the most appropriate clinical indications for a chest CT
   3. Identify and describe common and clinically important thoracic pathology on CT, including pulmonary nodules, emphysema, lung cancer, aortic dissection, pneumonia, lymphadenopathy and pulmonary embolus.
   4. Understand the difference between a standard chest CT and a high resolution chest CT.
   5. Be familiar with the use of high resolution chest CT in the evaluation for interstitial lung disease.

b. Week 2: Abdomen/Pelvis Core Didactic Sessions
i. Abdomen/Pelvis Session 1: At the end of this session, Boston University School of Medicine students will be able to:
   1. Learn an approach to ordering imaging studies
   2. Master a search pattern for abdominal and pelvic radiographs
   3. Identify tubes and lines
   4. Identify upper and lower GI tract anatomy and pathology on plain radiographs and barium studies such as upper GI series, small bowel follow-through, and barium enema, including SBO, LBO, gallstones and kidney stones

ii. Abdomen/Pelvis Session 2: At the end of this session, Boston University School of Medicine students will be able to:
   1. Review anatomy and general search algorithm on Abdominal/pelvic CT
   2. Learn an approach to ordering CT scans
   3. Understand the limitations of CT
   4. Learn the appearance of inflammation on CT
5. Recognize: AAA, appendicitis, cholecystitis, cirrhosis with varices, nephrolithiasis, diverticulitis, pancreatitis, SBO

iii. Abdomen/Pelvis Session 3: At the end of this session, Boston University School of Medicine students will be able to:
   1. Obtain abdominal and pelvic ultrasound images
   2. Review appearance of pelvic, abdominal, and renal anatomy on ultrasound
   3. Understand when to order an abdominal or pelvic ultrasound
   4. Learn ultrasound terminology
   5. Diagnoses to recognize, including acute cholecystitis, CBD dilation, cirrhosis, nephrolithiasis and hydronephrosis

iv. Abdomen/Pelvis Session 4 At the end of this session, Boston University School of Medicine students will be able to:
   1. Recognize important pelvic US diagnoses
   2. Become familiar with the versatility of ultrasound
   3. Learn the contrast agents used in fluoroscopy, CT and MRI

c. Week 3: MSK and Pediatric Radiology Core Didactic Sessions
   i. MSK Session 1: At the end of this session, Boston University School of Medicine students will be able to:
      1. Learn a general search pattern for MSK radiographs
      2. Review of normal anatomy: hand, wrist, elbow, shoulder, pelvis, hip, knee, ankle, foot
      3. Become familiar with basic fracture terminology
      4. Become familiar with basic orthopedic hardware
   ii. MSK Session 2 At the end of this session, Boston University School of Medicine students will be able to:
      1. Review common fractures and dislocations
   iii. MSK Session 3 At the end of this session, Boston University School of Medicine students will be able to:
      1. Review musculoskeletal pathology, including osteoarthritis, rheumatoid arthritis, psoriatic arthritis, gout, osteomyelitis, avascular necrosis, lytic bone lesions, blastic bone lesions
      2. Review cervical spine anatomy and pathology
   iv. Pediatric Radiology Session 1 At the end of this session, Boston University School of Medicine students will be able to:
      1. Discuss the meaning of the ALARA principle
      2. Identify and describe important pediatric radiologic diagnoses of the musculoskeletal system, chest and abdomen/pelvis

d. Week 4: Neuroradiology and Nuclear Medicine Core Didactic Sessions
   i. Neuroradiology Session 1: At the end of this session, Boston University School of Medicine students will be able to:
      1. State the indications and the correct imaging study(ies) for evaluating acute/emergent and chronic/subacute neurological problems
2. Describe an approach to assessing intracranial structures (midline, symmetry, ventricles, and cisterns).
3. Identify normal neuroanatomy
4. Identify and describe intracranial hemorrhage including, epidural and subdural hematomas and subarachnoid hemorrhage
5. Identify and describe stroke findings on CT and MRI, including vascular territories

ii. Neuroradiology Session 2: At the end of this session, Boston University School of Medicine students will be able to:
   1. Define the most appropriate initial imaging study for evaluating neurological trauma
   2. Identify and describe epidural and subdural hematomas and subarachnoid hemorrhage
   3. Identify and describe axonal shearing injury and brain herniation
   4. Identify and describe skull fractures, including orbital fractures, and mandibular fractures
   5. Identify and state the classification of facial fractures

iii. Nuclear Medicine Sessions 1 and 2: At the end of this session, Boston University School of Medicine students will be able to:
   1. Understand functional/physiologic principles of nuclear medicine (compared to other radiology modalities)
   2. Identify and describe abnormalities and utility of HIDA scan, thyroid scan, GI bleeding scan
   3. Identify and describe utility of a V/Q scan
Contact Information

Clerkship Director
Mikhail C.S.S Higgins, M.D., MPH.
Radiology Medical Student Director
Email: mcssh@bu.edu
Office: Department of Radiology
FGH Building 4th Floor
820 Harrison Avenue, Room 4001

Assistant Clerkship Director
Bindu Setty, M.D.
Assistant Medical Student Director
Email: Bindu.Setty@bmc.org
Office: Department of Radiology
FGH Building 3rd Floor
820 Harrison Avenue
Office Hours: Contact Justin Alfonse to set up a meeting with Dr. Setty.

Kaiser Permanente Santa Clara Site Director
Lina Nayak, M.D.
Assistant Medical Student Director
Email: Lina.Nayak@kp.org

Clerkship Coordinator
Justin Alfonse
Medical Student Coordinator
Telephone: (617) 414-4914
Email: justin.alfonse@bmc.org
Office: Department of Radiology
FGH Building, 3rd Floor
820 Harrison Avenue, Room 3002
Office Hours: Wednesday, Thursday, 10am to 3pm
Clerkship Description

Focus of Radiology Selective
Diagnostic imaging with emphasis on understanding strengths, weaknesses, appropriate descriptive terminology, organized approach to analysis of findings, and most appropriate use of various imaging modalities. Significant emphasis is also placed on appropriate use of image-guided diagnosis and treatment, the interpretation of radiologic reports, and communication, both with patients and with radiologists. Students have several opportunities to present findings in formal and informal conference settings, to gain experience in clear and logical use of the language of medicine and of imaging.

Pre-requisite knowledge and skills
Students must have completed their second year curriculum and the Transitional Clerkship, and have taken the Step-I exam prior to taking this clerkship.

Clerkship Changes Made Based on Feedback
Additional assessment reviews have been added to the schedule on a regular basis to ensure students receive feedback on their quizzes and OSCEs. We’re also opening up our reading rooms to more in-person student time.

Diversity, Equity, and Inclusion Initiatives
We will continue to strive for excellence in this arena. We will dedicate a portion of time during orientation and the Imaging Bootcamp lectures to learning more about diversity, equity and inclusion in the field of radiology.

Site Information
Site maps indicating the availability of student resources at our affiliate hospitals can be found under the Clinical Sites section of the Medical Education Office’s Student Resources page at http://www.bumc.bu.edu/busm/education/medical-education/student-resources/#siteinfo.

Boston University Medical Center
820 Harrison Avenue
Boston, MA 02118
Site Director: Dr. Mikhail C.S.S Higgins, mcssh@bu.edu
Site Administrator: Justin Alfonse, 617-414-4914, justin.alfonse@bmc.org

Description of site: In the event of a fully in person clerkship, medical students will spend the vast majority of their time in the following two locations:

1. All lectures, quizzes, OSCEs, Labs, Projects and Exams will take place virtually until further notice.
2. Virtual meeting links will be provided to the students for all supporting educational activities.

Kaiser Permanent Santa Clara
700 Lawrence Expressway
Santa Clara, CA 95051
Site Director: Dr. Lina Nayak, Lina.Nayak@kp.org
Selective Schedule

Daily Lectures and Conferences: Attendance mandatory, Radiology's Williams Conference Room, FGH Building – 4th Floor, or via Zoom. Morning Lectures will be from 8am to 9am, and there will be daily conferences at noon. Unexcused absence from a mandatory exercise -2.5% of final grade. If you plan to be away, e.g., interviews, please submit your “Time-Off” request with all associated documents to the Medical Student Coordinator.

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:00-9:30am</td>
<td>Didactic session for Radiology Selective with Radiology Resident</td>
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<td>9:30-11:30am</td>
<td>Interdisciplinary conferences or Section Readouts</td>
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<tr>
<td>12:00pm – 1:30pm</td>
<td>Two back to back Radiology Noon Conferences</td>
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<td></td>
<td>You will be forwarded a weekly schedule of Noon conferences –</td>
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<tr>
<td></td>
<td>Educational, Resident, and Case Conferences.</td>
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<tr>
<td>1:30 – 3:00pm</td>
<td>Didactic session for Radiology Selective with Radiology Attending or</td>
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<tr>
<td></td>
<td>Section Readouts or Interdisciplinary conferences</td>
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<tr>
<td>3:00 – 5:00pm</td>
<td>Selective-related activity per the daily schedule.</td>
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Selective requirements: In addition to regular schedule (see above)

- Final examination: Last Friday afternoon of each Block, students will have an hour and forty minutes to complete their exam once they start.
- Final Exams and Quiz make-ups: Make up for the weekly quizzes, OSCEs and final examination must be coordinated with the Medical Student Coordinator and Selective Director. Email the Medical Student Coordinator as soon as you know that you will not be able to attend the Selective, submit a time off form, and coordinate a time to make up the quiz. Contact the Selective Director if you are not going to be present on the day of the scheduled final examination and arrange for an alternate examination time.
- Absences, including sick days and personal appointments: If you must be absent due to illness or other reason such as medical or dental appointment, you must email or speak to the Medical Student Coordinator stating that you need to be out secondary to an illness or an appointment. In order that your privacy may be preserved, please do not indicate the nature of your illness or appointment.
- Days away for residency interviews: The Radiology Department allows for 7 max absences. Any additional days requested beyond 7 days must be approved by the Radiology Medical Student Director. Students must remediate each absence by doing an additional evening assignment or during a weekend call shift with one of the Radiologists. Please make sure the Radiology Medical Student Director is aware of the absence via e-mail. Please review the BUSM Time off Policy for further clarification which is on blackboard and at this desk.
- Dress code: Professional attire. Consistent with BUSM/BMC requirements.
- Cameras should remain on during didactic sessions to allow for direct student engagement and participation.
- Use of cell phones: Not permitted, including no cell phone use while attending virtual educational activities.
Student Disciplinary Code of Academic and Professional Conduct:  
https://www.bumc.bu.edu/busm/about/diversity/prs/medical-student-disciplinary-code/

**Holidays**
Thanksgiving: Wednesday, November 23, 2022 at 12PM – Sunday, November 27, 2022
Intercession: Saturday, December 24, 2022 – Monday, January 2, 2023
Spring Break: Saturday, March 4, 2023 – Sunday, March 12, 2023

Other holidays that occur during specific blocks will be communicated by the clerkship director.

Holidays by Clerkship can be viewed on the Medical Education website at:  
http://www.bumc.bu.edu/busm/education/medical-education/academic-calendars/#clerkhols

**Assessment and Grading**

**Clerkship Grading Policy**

<table>
<thead>
<tr>
<th>HOW MUCH EACH PART OF YOUR GRADE IS WORTH:</th>
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<tbody>
<tr>
<td>Quizzes</td>
<td>30%</td>
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<tr>
<td>OSCEs</td>
<td>32%</td>
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<tr>
<td>Shelf/Exam Percentage</td>
<td>30%</td>
</tr>
<tr>
<td>“Other” Components Percentage</td>
<td>8%</td>
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<tr>
<th>HOW YOUR FINAL WORD GRADE IS CALCULATED:</th>
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<tbody>
<tr>
<td>Pass</td>
<td>&gt;67% overall score</td>
</tr>
<tr>
<td>Fail</td>
<td>&lt;67% overall score</td>
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**SHELF/EXAM GRADING**
Exam minimum passing (percentile/2 digit score) 50%

**What is “Other” and what percentage is it worth?**
- Evidenced Based Imaging Project 4%
- Radiology Anatomy Lab 4%

**Professional Conduct and Expectations**
Evaluation of a medical student’s performance while on a clinical clerkship includes all expectations outlined in the syllabus and clerkship orientation as well as the student's professional conduct, ethical behavior, academic integrity, and interpersonal relationships with medical colleagues, department administrators, patients, and patients' families. Student expectations include those listed below in professional comportment sections. If there are multiple professionalism concerns through a clerkship the student will not be eligible to receive honors on the clerkship. A student will be given feedback prior to receiving their final grade for the clerkship if their professional conduct is of concern. Prior to receiving a final grade, if a clerkship director determines that a student does not meet the professional conduct and expectations of the clerkship, a student will fail the clerkship. Any professionalism lapses resulting in either a clerkship fail or ineligibility to receive honors will require narrative comments by the clerkship director in the summative comments section of the final evaluation and the student will be given feedback in advance of the final grade form submission.

**Clerkship-Specific Failure and Remediation Policies/Procedures**
# BUSM Grade Review Policy

| BUSM Grade Reconsideration Policy is located in the Policies and Procedures for Evaluation, Grading and Promotion of Boston University School of Medicine MD Students: [http://www.bumc.bu.edu/busm/faculty/evaluation-grading-and-promotion-of-students/](http://www.bumc.bu.edu/busm/faculty/evaluation-grading-and-promotion-of-students/) |

## AME/Kaiser Core Faculty Direct Observation

During the third year, students will be directly observed by their core AME (or Kaiser) faculty three times throughout the year. They will also submit one write up in their core AME/Kaiser faculty’s discipline, and one video of a session with an SP for review and feedback. At the end of the year, the core AME/Kaiser faculty will write a narrative summary describing the student’s growth trajectory and competency development in the observed domains. This narrative will be included as part of the End of Third Year Assessment (in addition to the EOTYA 6 station OSCE).

## Formative Assessments

The purpose of formative assessment is to improve student learning by providing feedback on how well they are learning skills and content during the clerkship. Formative assessments are not included in the calculations of students’ final grades. Each clerkship has required FOCuS (Feedback based on Observation of Clinical UME Student) forms which must be completed by the mid/end of the clerkship. These forms will provide formative assessment through direct observation of CSEF behaviors. Each student is required to complete one interviewing technique and one physical exam FOCuS form on each clerkship.

## Formative Assessment and Feedback Policy

Boston University School of Medicine (BUSM) ensures that each medical student is provided with formative assessment early enough during each required course or clerkship to allow sufficient time for remediation. Formative assessment occurs at least at the midpoint of each required course or clerkship four or more weeks in length.


## Mid-Clerkship Review

You and your clerkship director, site director or primary faculty/preceptor will complete the **BUSM Mid-clerkship Evaluation form** at the mid-clerkship point.

The purpose of this evaluation is to give the student a chance to understand both their strengths as well as opportunities to improve. The feedback received at the mid-clerkship review is intended to allow the student to improve their clinical skills in real time.

## Final Summative Assessments

The final summative assessment will be based on the clerkship grading policy and include a final narrative describing your overall grade, clinical grade, based on the CSEF (Clinical Student Evaluation Form), and other assessments, depending on the clerkship. The summative narrative must include a final summative statement regarding your professionalism on the clerkship (meet expectations or did not meet expectations) per the AAMC MSPE requirements. The final grade form summative narrative appears in your MSPE and is based on aggregate comments from your individual CSEFs and is written by a site director/clerkship director and is reviewed by the clerkship director before submission.
Radiology Examination
Students will take the Radiology Examination on the last Friday of the selective (unless otherwise communicated by the Medical Education Office). Students are given a reading day the day before the exam. Students do not report to their clerkship site on the reading day or the day of the exam. Students will be given two hours to complete this exam.

Exam Policies
http://www.bumc.bu.edu/busm/education/medical-education/policies/exam-policies-for-medical-students/

Testing Center Policies
http://www.bumc.bu.edu/busm/education/medical-education/policies/t-11-testing-center/

Make-Up Exams
Students needing to make up the exam or remediate only the exam portion of the clerkship must contact the Clerkship Coordinator to arrange for a make-up/remediation date. Students may not take a make-up or remediation exam during any block they currently have a scheduled rotation. Make-ups and remediation exams will typically be scheduled at the end of the third-year blocks between mid-May and early June.

Roles and Responsibilities
Each clerkship is directed by the BUSM Clerkship Director who oversees all clerkship sites. Each clinical site is directed by a clerkship site director who ensures that students are appropriately supervised and faculty and residents are prepared to teach at their site. Clerkships also have multiple clinical faculty that have varying degrees of exposure to students. The responsibilities of the directors and coordinators are described below more specifically. Clerkship directors are assisted by assistant clerkship directors, clerkship site directors, and clerkship coordinators.

BUSM Clerkship Director & Assistant Clerkship Director
• Oversees the clerkship curriculum’s design, implementation, and administration
• Defines clerkship specific learning objectives and requirements
• Creates and maintains an appropriate learning environment, modeling respectful and professional behaviors for and toward students
• Ensures student and faculty access to appropriate resources for medical student education
• Orients students to the overall clerkship, including defining the levels of student responsibility requirements (i.e., required diagnoses and procedures, direct observations, forms, feedback), grading structure and student schedule
• Oversees teaching methods (e.g., lectures, small groups, workshops, clinical skills sessions, and distance learning) to meet clerkship objectives
• Develops faculty involved in the clerkship and provides faculty development across sites specific to clerkship needs
• Evaluate and grade students
  o Develops and monitors assessment materials
  o Uses required methods for evaluation and grading
  o Assures timely mid-clerkship meetings at all sites with students
  o Ensures students receive timely and specific feedback on their performance
  o Submits final grade form for students via BUSM evaluation system
• Evaluates clerkship, faculty, and programs via peer review and annual data from the Medical Education Office (MEO) and national organizations (AAMC, NBME, etc.)
• Supports each student’s academic success and professional growth and development, including identifying students experiencing difficulties and providing timely feedback and resources
• Address any mistreatment and professionalism concerns in real time and communicate with MEO
• Participates in the BUSM clerkship Educational Quality Improvement and peer review processes with completion of action items
• Ensures LCME accreditation preparation and adherence
• Adheres to the AAMC-developed guidelines regarding Teacher-Learner Expectations

Overall Clerkship Coordinator
• Supports the clerkship director in their responsibilities above
• Creates and maintains an appropriate learning environment, modeling respectful and professional behaviors for and toward students
• Responds within one business day to student emails and questions
• Maintains student rosters and clinical schedules
• Coordinates orientations and didactic sessions
• Liaises with site directors and administrators to coordinate student experiences across all sites and timely collection of evaluations
• Verifies completion of clerkship requirements, including midpoint and final evaluations for each student, required diagnoses, and FOcuS forms
• Monitors students’ reported work hours and report any work hours violations to the clerkship director
• Coordinates and proctors clerkship exams

Clerkship Site Director
• Oversees the clerkship curriculum and administration at the site
• Creates and maintains an appropriate learning environment, modeling respectful and professional behaviors for and toward students
• Is available and responsive to students’ questions and concerns
• Ensures all faculty and residents teaching students are oriented to students’ expectations, responsibilities, learning objectives, requirements, and assessments used in the clerkship
• Ensures student and faculty access to appropriate resources for medical student education
• Orients students to the clinical site when new students arrive at the site
• Reviews clerkship requirements and student expectations at site
  o Provides site specific information including, but not limited to, lockers, library, call rooms as applicable and required by LCME
  o Reviews site-specific schedule, discusses student role and responsibilities at site, supervision at site, and who to contact with questions and concerns
• Supervises students and ensures clerkship specific required observations are completed
• Meets with the student for the Mid-clerkship review
• Meets with the student for the final exit meeting
• Ensures timely and specific formative feedback based on direct observations
• Works with faculty and residents to delegate increasing levels of responsibility to students based on clerkship requirements
• Provides site didactics when applicable
• Recognizes students with academic or professionalism difficulties and communicates to Clerkship Director in a timely fashion
• Completes and ensures the accuracy of student evaluation forms, including formative and summative narratives for students at the site
  o Ensures collection of feedback and evaluation data from all physicians who work with each student by the end of the clerkship block to meet BUSM grading deadlines
  o Ensures that narrative data are consistent with and support numerical data
  o Evaluates students fairly, objectively, and consistently following medical school and clerkship rubrics and guidelines
• Addresses any student mistreatment concerns immediately and notifies the Clerkship Director
• Adheres to the AAMC Teacher-Learner Expectations guidelines
• Reviews site specific evaluations at mid-year and end of year and facilitates improvements based on data
• Works with BUSM to provide faculty development for faculty and residents
• Answers Clerkship Director’s questions or concerns regarding site evaluation or student concerns
• Participates in educational programming and meetings as requested by Clerkship Director or Assistant Dean for Affiliated Sites
• Adheres to LCME guidelines

Clerkship Site Coordinator
• Supports the clerkship site director in their responsibilities above
• Creates and maintains an appropriate learning environment, modeling respectful and professional behaviors for and toward students
• Responds within one business day to student emails and questions
• Sends out welcome email informing students where and when to arrive at least 72 hours before student start date
• Provides students with their contact information and remains available for questions and concerns during working days and hours
• Ensures students are oriented to clinics and hospital
• Obtains, tracks, and manages student rosters
• Obtains and maintains student information required by the site, as applicable
• Creates and distributes:
  o Student schedules to students, faculty, and staff before clerkship start date
  o Didactics/Presentation schedules, if applicable
• Schedules mid-clerkship evaluations; tracks and keeps record of completion and provides to overall Clerkship Coordinator
• Informs faculty and overall Clerkship Coordinator of student absences
• Arranges and schedules educational resources as applicable (e.g., SIM lab, EMR & Scrub training) and helps students troubleshoot
• Provides students with necessary documents and resources needed to be oriented to site
• Monitors and processes evaluations for distribution to faculty and residents
• Collects timely feedback from faculty for mid and end of clerkship evaluations to meet BUSM deadlines
• Collects feedback and evaluation data from all physicians who work with each student by end of clerkship block to meet BUSM grading deadlines
• Understands evaluation system and all site requirements
• Communicates site information changes (e.g., faculty, rotation details) to BUSM’s Clerkship Director and Clerkship Coordinator
• Maintains communication with Clerkship coordinator centrally and response within one business day
• Coordinates site specific meetings and faculty development with BUSM

Primary Clinical Faculty/Preceptors/Trainees
• Sets and clearly communicates expectations to students
• Observes students’ history taking and physical exam skills, and documents it on the FOCuS form
• Delegates increasing levels of responsibility to students based on clerkship requirements
• Maintains appropriate levels of supervision for students at site
• Creates and maintains an appropriate learning environment, modeling respectful and professional behaviors for and toward students
• Recognizes students with academic or professionalism difficulties and communicates to Clerkship Director in a timely fashion
• Gives students timely and specific formative feedback based on direct observations
• Assesses students objectively using BUSM’s evaluation system
• Adheres to the AAMC Teacher-Learner Expectations guidelines

Supervision
Initially, the primary clinical faculty members should designate time to observe you performing: history taking, focused physical exam, clinical problem-solving and interaction with patients and patient education. Once the supervisor establishes the student’s level of confidence and competency, the student should be delegated increasing levels of responsibility in patient care, as appropriate. Although students may initiate a particular patient encounter on their own and without direct supervision, the faculty must at some point review the encounter with the student and inform the patient in-person that the student’s assessment and management plan has been reviewed and approved by the faculty. The faculty is ultimately responsible for the evaluation, treatment, management, and documentation of patient care. If students have concerns regarding their clinical supervision, the site director and clerkship director should be immediately notified. Any supervision concerns should also be immediately submitted through the ATM link or directly to the Associate Dean of Medical Education.

Supervision and Delegating Increasing Levels of Responsibility
It is expected that the level of student responsibility and supervision will be commensurate with student’s competency and level of confidence. When the student arrives to a new setting, a faculty may wish to observe you for the first session. Thereafter, you should begin to see patients on your own. In the outpatient setting, the student should initially perform 4-5 focused visits per day in the first week, increasing to 6-12 thereafter. In the inpatient setting, the student should initially follow 1-2 patients and increased to 3-4 thereafter. When a student feels that they are being asked to perform beyond their level of confidence or competency, it is the responsibility of the student to promptly inform the preceptor. It is then the preceptor’s
responsibility to constructively address the student’s concerns and appropriately restructure the teaching encounter to address the student’s learning needs.

**Under no circumstances should the following occur:**

- Patient leaves the office/hospital during an in person experience with never having had a direct face-to-face encounter with clinical faculty/supervising resident.
- Primary faculty gives “prior approval” for student to perform intervention (order labs, prescribe meds) without satisfactory review.
- Patient leaves office/hospital without being informed that assessment/management plan has been directly reviewed and approved by the faculty.
- Learning in which a student is expected to perform an intervention or encounter without the prerequisite training and/or adequate supervision.
- Student note provides the only record of the visit. Although all faculty see all patients, faculty must document that they were the person responsible for seeing and examining the patient.

**Intimate Exam Policy**

Students participating in an intimate exam with a patient (which includes, pelvic, genitourinary and rectal exam) must have a chaperone with them, irrespective of the gender of the patient or the student. Permission to participate in an intimate exam must be obtained by the supervisor in advance of the examination itself. The patient has the right to decline student attendance at any examination. If a student is unable to perform any intimate exam due to patient preference, the student’s evaluation will not be impacted and if necessary, the clerkship director will provide an alternative experience.

**Physical Exam Demonstrations**

The demonstration of the physical examination on students should not be done by any supervisor of students including residents and attending faculty. Practicing the physical examination on students places them in a position where they may feel pressure to consent to something they may not feel comfortable with.

**Third Year Student**

**Professional Comportment**

Students are expected to adhere to the AAMC-developed guidelines regarding Teacher-Learner Expectations, located on the Policies page, under “Academic Policies and Information” ([http://www.bumc.bu.edu/bsm/files/2015/05/AAMC-Teacher-Learner-Expectations.pdf](http://www.bumc.bu.edu/bsm/files/2015/05/AAMC-Teacher-Learner-Expectations.pdf))

Students are expected to be aware of and follow the site expectations on professional comportment, including, but not limited to, dress code and the use of phones, pagers, and laptops. Students must arrive on time at their site and for any scheduled sessions. Any missed sessions and absences must adhere to the Attendance & Time Off Policy.

Further, below are expectations for student professional conduct and behavior in the core clerkship curriculum. These include, but are not limited to:

- Treating and communicating with the clerkship team in a respectful manner.
- Engaging in the core curriculum and participating respectfully with peers and colleagues at all times.
- Arriving at clerkship didactic sessions on time and being present throughout sessions.
- Requesting faculty and resident evaluations in a timely manner.
- Reviewing and responding to e-mail requests in a timely manner.
- Returning borrowed clerkship materials on time.
- Handing in all assignments on time.
- Completing all logs and FOCuS forms by the clerkship specific deadline.
- Informing clerkship leadership and supervising faculty/residents of absences in advance of the absence.

Professional conduct will be reviewed at the mid-clerkship feedback session. Additionally, students will be given feedback prior to receiving their final grade when professionalism concerns are identified on the clerkship. If students are not meeting expectations for professional conduct and behavior in the clerkship or there are concerns, students will be made aware of the concerns noted by the clerkship directors, clerkship coordinator, faculty or residents.

**Ethical Behavior for Examinations and Mandatory Sessions**

- Refrain from any conversation with your peers during exams and as you leave the L-11 testing space (when applicable), including within the vending room and elevator waiting area, until you are on the elevator.
- Refrain from leaving your computer camera view at any point during the examination. Any time where a student cannot be viewed may result in failure of the examination.
- Don’t seek or receive copies of the examinations
- Signing in classmates, or signing in yourself and not staying for mandatory sessions is considered cheating and violations will be referred to Medical Student Disciplinary Committee
- If you are aware of any violations of the ethical standards listed above, within the Student Disciplinary Code of Academic and Professional Conduct, or otherwise, report it to the Clerkship Director

**Student Evaluation of the Clerkship**

Student feedback is a highly valued, critical resource for helping us continually improve our curriculum. Evaluation of learning experiences is a requirement of the Liaison Committee on Medical Education. To ensure that we have a representative amount of data on our courses and clerkships, all students are expected to complete an evaluation via BUSM’s evaluation system, eValue ([www.e-value.net](http://www.e-value.net)), for each of the courses/modules and their instructors. All evaluations are anonymous and aggregate data is only released to clerkship directors after grades have been submitted for the blocks. Please comment freely and honestly about your experience.

**Blackboard**

Students will have access to a Blackboard site for the clerkship. The site is listed under “My Courses” as ‘MS412: Radiology Clerkship Selective / Core Elective / Radiology Elective’ on your Blackboard landing page.

The Blackboard page will be introduced during orientation at the start of the block, and all of its resources will be made available. You can start by looking through the ‘1. Selective + Kaiser’ tab on the left hand side.

Students who have questions about the Blackboard site or find that they do not have access to the site should contact the Clerkship Coordinator for assistance.

Blackboard Learn: [https://learn.bu.edu/](https://learn.bu.edu/)
Assignments

During the Radiology Selective you’ll have two graded assignments outside of the weekly quizzes and OSCEs and the final exam. The first assignment is the **Evidence Based Imaging (EBI) presentation**.

- Students develop and present imaging algorithms for common clinical scenarios
- Working in groups of 2-3, each group will select one case from the list of 25 cases (can be found on blackboard under Required Presentation and Projects)
- Each group will create a PowerPoint presentation and facilitate discussion of their case
- The group will answer 3 questions for its case:
  - What is the differential diagnosis?
  - What imaging tests could we order?
  - What are the data to support or not support the use of these tests, the relative risks and benefits?
- Each group will create a one-page handout outlining the imaging algorithm for their case’s specific clinical diagnosis
- Please use the ACR Appropriateness Criteria ([http://www.acr.org](http://www.acr.org)) as your primary resource
- Grading: Pass/Fail

An example of an Evidence-Based Imaging presentation can be found in the Student Presentations folder on Blackboard under the Radiology Clerkship.

The second assignment is the **Radiology-Anatomy Lab**:

**Objective:** By the end of the Radiology Selective, BUSM students will be able to demonstrate knowledge of a complex area of anatomy through interaction with three-dimensional models, static and scrollable images, and ultrasound.

**Description of lab:** One afternoon during the month, BUSM students will take part in an interactive lab experience co-sponsored by Radiology and Anatomy that will recall a complex anatomic area using a blended learning model, approaching the task from many different viewpoints. Students will work in teams of 4-5 to answer questions and solve problems that relate the chosen anatomic area to clinical cases where this anatomic knowledge is key to diagnosis and treatment.

Examples of regions of anatomy that have been studied in this manner include vascular access via the femoral and subclavian approach, female pelvic muscular and organ anatomy, the liver with focus on vascular supply and issues related to portal hypertension, the cerebral venous and arterial circulation, the rotator cuff, the coronary arterial and cardiac venous circulation including anomalous origins of vessels, and the brachial plexus. New models are in constant development, with the assistance of interested fourth-year students and Radiology residents.

No pre-lab preparation is expected. Students are invited to fill out a survey after the lab, which is anonymous, to assist in ongoing improvement.
Patient Encounters/Case Logs
Across the third year, there are required patient encounters and procedures that must be logged whenever they are seen. To log the patient encounter, students must have participated in the history, physical exam, assessment, and plan development of the patient.

Required Patient Encounters (BUSM Core)
http://www.bumc.bu.edu/busm/education/medical-education/faculty-resources/
Students should log every time they see any patient with the required patient encounter and continue to log throughout all clerkships.

Alternative Patient Encounters
If a student has not been able to experience all patient encounters required for the clerkship, students must address any gaps in their patient encounters through an alternative experience.

Patient Encounter Log
Students are expected to log their patient encounters in eValue (www.e-value.net). Patient logs help the clerkship ensure that each student is seeing a diagnostically diverse patient population, an adequate number of patients, and performing a sufficient number of required procedures and diagnoses. The directions on how to log patient encounters can be found on the eValue help page http://www.bumc.bu.edu/evaluate/students/. Students must bring a printed copy of their patient encounter and procedure log to their mid rotation feedback meeting.

Policies and Procedures for Evaluation, Grading and Promotion of Boston University School of Medicine MD Students
http://www.bumc.bu.edu/busm/faculty/evaluation-grading-and-promotion-of-students/

Collaborative Student Assessment System

Student Disciplinary Code of Academic and Professional Conduct
http://www.bumc.bu.edu/busm/faculty/medical-student-disciplinary-code/

Attendance Policies
On-site hours must be limited to 80 hours per week, averaged over a two-week period. Violations should be reported directly to the clerkship director or to an Associate Dean (Medical Education or Student Affairs). Time off requests must comply with the Attendance & Time Off Policy.

  - 3rd Year Excused Absence Form: https://www.app.bumc.bu.edu/MeDPersonalDays/home/Index
- Work Hours: http://www.bumc.bu.edu/busm/education/medical-education/policies/work-hours/
- Religious Observance: https://www.bu.edu/chapel/religion/religiouslifepolicies/
Personal Day Policies
As part of becoming a professional, medical student should have the flexibility to address personal and professional needs at their discretion. In the clerkship year, as students transition to more of a professional work environment, they gain the responsibility of a working professional, yet do not have the agency to attend to their personal needs. As such, the Student Affairs Office and Medical Education Office have developed this personal day policy in conjunction with the clerkship directors for the core clerkship year. In addition to addressing issues of wellness and professional development, this policy will teach students the importance of time management and managing days off.

http://www.bumc.bu.edu/bsm/education/medical-education/policies/personal-days-policy/

Clerkship Specific Blackout Dates
There are no Radiology specific blackout dates.

Scrubs Policy
http://www.bumc.bu.edu/bsm/education/medical-education/policies/scrubs-policy/

BUSM Policies
In addition to the expectations listed above, all students are expected to adhere to BUSM and Boston University policies.

http://www.bumc.bu.edu/bsm/education/medical-education/policies/

BU Policies and Student Support Services

Appropriate Treatment in Medicine
Boston University School of Medicine (BUSM) is committed to providing a work and educational environment that is conducive to teaching and learning, research, the practice of medicine and patient care. This includes a shared commitment among all members of the BUSM community to respect each person’s worth and dignity, and to contribute to a positive learning environment where medical students are enabled and encouraged to excel.

BUSM has a ZERO tolerance policy for medical student mistreatment.

Students who have experienced or witnessed mistreatment are encouraged to report it using one of the following methods:

- Contact the chair of the Appropriate Treatment in Medicine Committee (ATM), Dr. Robert Vinci, MD, directly by email (bob.vinci@bmc.org)
- Submit an online Incident Report Form through the online reporting system https://www.bumc.bu.edu/bsm/student-affairs/atm/report-an-incident-to-atm/

These reports are sent to the ATM chair directly. Complaints will be kept confidential and addressed quickly.

Appropriate Treatment in Medicine website: http://www.bumc.bu.edu/bsm/student-affairs/atm/
Needle Sticks and Exposure Procedure  
http://www.bumc.bu.edu/busm/student-affairs/additional-student-resources/needle-stickexposure/

Boston University Sexual Misconduct/Title IX Policy  

Boston University Social Media Guidelines  
http://www.bu.edu/policies/information-security-home/social-media-guidelines/

Learning Strategies and Tools

Recommended Texts

- **Felson’s Principles of Chest Roentgenology**
- **Squire’s Fundamentals of Radiology**  
  Suggested chapters:
  - 1 – Basic Concepts
  - 2 – The Imaging Techniques
  - 11 – How to Study the Abdomen
  - 12 – Bowel Gas Patterns, Free Fluid, and Free Air
  - 13 – Contrast Study and CT of the Gastrointestinal Tract
  - 14 – The Abdominal Organs
  - 16 – Men, Women, and Children
  - 18 – The Central Nervous System
  - 19 - Interventional Radiology
  - 20 – The Latest in Diagnostic Imaging
- **Squire’s Fundamentals of Radiology**  
  Reference chapters – Please review the images and figures:
  - 4 – How to Study the Chest
  - 5 - The Lung
  - 6 – Lung Consolidations and Pulmonary Nodules
  - 7 – The Diaphragm, the Pleural Space and Pulmonary Embolism
  - 8 – Lung Overexpansion, Lung Collapse, and Mediastinal Shift
  - 9 – The Mediastinum
  - 10 – The Heart

eValue Student Resources  
http://www.bumc.bu.edu/evalue/students/

Echo360/Technology  
Echo360 may only be used for streaming captured lecture videos; the videos may not be downloaded. Taking smartphone or digital pictures or videos of any part of the lecture in class, or at home, is similar to downloading and is not allowed. There are a number of reasons for this, including that students and/or the University may be liable for violations of federal copyright and privacy laws as a result of the use of copied material.

If you experience any technical problems, please report the issue in one of the following ways to generate an IT ticket:
• **Echo360 Related Issues:** Create a ticket on the Ed Media site ([http://www.bumc.bu.edu/bumc-emc/instructional-services/echo360/](http://www.bumc.bu.edu/bumc-emc/instructional-services/echo360/)): sign in and provide pertinent information that will enable an effective response. Have a link to the problematic video ready to copy/paste into this form.

• **Educational Technology Related Issues:** For assistance with technology supported by BUMC's Educational Media (e.g. ExamSoft), tickets can be created via their website at: [http://www.bumc.bu.edu/bumc-emc/instructional-services/report-an-educational-technology-issue/](http://www.bumc.bu.edu/bumc-emc/instructional-services/report-an-educational-technology-issue/)

• **Other Technology Related Issues:** For assistance with BU-wide technology, such as Blackboard, email an example (e.g. picture or very brief phone video) to ithelp@bu.edu with a descriptive subject line and give as many details as possible on the what, where, how you are using the service and what type of computer, browser, etc. along with type of student (i.e. BUSM III). Always include link(s) to or screen shots of where the issue is occurring.

**BUSM Policy on Recordings:** [https://www.bumc.bu.edu/busm/education/medical-education/policies/classroom-recordings/](https://www.bumc.bu.edu/busm/education/medical-education/policies/classroom-recordings/)

**Tutoring**

**Disability & Access Services**
Disability & Access Services’ goal is to provide services and support to ensure that students are able to access and participate in the opportunities available at Boston University. In keeping with this objective, students are expected and encouraged to utilize the resources of Disability & Access Services to the degree they determine necessary. Although a significant degree of independence is expected of students, Disability & Access Services is available to assist should the need arise.

[https://www.bu.edu/disability/accommodations/](https://www.bu.edu/disability/accommodations/)