

Radiology Selective

Academic Year 2025-2026

Radiology
MEDMD 321
March 2025

Clerkship Director: Ari Damla
Clerkship Coordinator: Mariama Bah





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Clerkship Learning Objectives

- 1. Identify and describe the basic principles of various imaging modalities.
- 2. Recognize and describe common radiological findings in common disease entities.

3. Describe and apply ACR Appropriateness Criteria in clinical scenarios.
4. Describe the role of the radiologist in the health care system and the importance of multidisciplinary work and team-based management in radiology
5. Demonstrate the ability to utilize virtual PACS and explain the benefits of technology in imaging.
6. Integrate pertinent clinical history and imaging findings into the differential diagnosis and management.
7. Communicates the pertinent information to include (e.g., relevant clinical history) when requesting diagnostic imaging.
8. Consistently demonstrate professional behavior consistent with the values of the medical profession
9. Display skills of lifelong learning including generating clinical questions or identifying one's own learning needs, using appropriate resources to answer questions or close learning gaps, engaging in self-assessment and goal setting and demonstrating growth in response to feedback

Contact Information

Clerkship Director



Ari Damla, MD

Radiology Medical Student Clerkship Director

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Office Hours: Contact Mariama Bah to set up a meeting with Dr. Damla

Assistant/Associate Clerkship Director



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Assistant Medical Student Director

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Clerkship Coordinator



Mariama Bah

Medical Student Coordinator

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Office Hours: Monday - Friday, 8:30am to 5:00pm

Clerkship Description

Focus of clerkship

Third-year radiology clerkship focuses on providing students with a basic understanding of radiological imaging and intervention, while also offering hands-on learning through observing radiologists, participating in multidisciplinary conferences, and using virtual PACS and simulation centers. The curriculum blends lectures and independent study, equipping students with basic essential radiology knowledge and skills for their future careers in various medical specialties.

The purpose of the third-year clerkship in Radiology is to provide the fundamentals of radiological imaging and intervention. This Clerkship aims to immerse the student in Radiology and prepare them for encounters of radiological imaging or intervention in their future career in any chosen specialty. The clerkship will teach the basics of acquiring and interpreting common imaging modalities, such as X-rays, CT scans, MRI, and ultrasound, with the goal of identifying the basic relevant findings and their clinical implications. It will also teach how to integrate information from clinical history and imaging in order to produce a differential diagnosis and guide appropriate management.

During the clerkship, students will be exposed to the inpatient and outpatient imaging. They will learn about the radiologic diagnosis of common conditions using various diagnostic and interventional radiology techniques. Students will also learn about the American College of Radiology (ACR) Appropriateness Criteria, which guides the selection of the most appropriate imaging examinations for specific clinical conditions. The curriculum features a blend of onsite lectures and independent study, with engaging opportunities for hands-on learning through interactive sessions using virtual PACS and simulation sessions. Students will also spend time in the reading rooms, observing radiologists and residents at work, experiencing the consultative nature of radiology with other specialties, and observing radiologists' roles in multi-disciplinary conferences.

In addition, the clerkship offers support to those considering Radiology as a future career. Radiology is an evolving field with continuous advancements in imaging technology and breakthroughs in therapeutics, including artificial intelligence-assisted diagnostics, minimally invasive image-guided interventions, and molecular imaging for personalized medicine, to name a few. This clerkship aims to provide a strong foundation in radiological knowledge and skills, fostering a deeper understanding of the field's impact on patient care across various medical specialties in the inpatient setting.

Clerkship Changes Made Based on Feedback

We are incorporating virtual PACS simulation into the selective, so students have the opportunity to simulate the work of a radiologist by navigating a PACS and make basic findings.

Additional assessment reviews have been added to the schedule on a regular basis to ensure students receive feedback on their quizzes and OSCEs on a timelier basis.

We have converted to an on-site rotation so students can have more face-to-face time with faculty and residents.

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.

Other Recent Changes to the Clerkship

Students will have several interactive sessions during their rotation including team-based learning, PACS simulation, time in the simulation center for hands-on activities, and time in the reading rooms. There will be a quiz every morning based on material learned the previous day that will be reviewed immediately after completion.

Clerkship Sites

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

Site Director: Dr. Ari Damla, (617) 414-4914, ari.damla@bmc.org

Site Administrator: Mariama Bah, (617) 414-4914, mariama.bah@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, Projects and Exams will take place **onsite**.
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

Clerkship Schedules

This is an example of the basic schedule. Further details will be provided.

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00	Orientation	Quiz 1 Imaging Modalities	Quiz 2 Chest Cases	Quiz 3 Chest Cases	Abdomen 3
8:30		Quiz 1 Review	Quiz 2 Review	Quiz 3 Review	
9:00	Imaging Modalities 1	Chest 1	Chest 3	Abdomen 1	OSCE 1
9:30					OSCE 1
10:00	Visiting X-Ray	Chest Shadowing	Chest Shadowing	Body Shadowing	Body Shadowing
10:30	Visiting CT				
11:00	Visiting Ultrasound				
11:30	Visiting MRI				
12:00	Noon Conference				
12:30					
13:00	Imaging Modalities 2	Chest 2	Chest 4	Abdomen 2	Self Directed
13:30					
14:00	Orientation to Simulation	Simulation	Simulation	Simulation	Simulation
14:30					
15:00	Self Directed Resources	Self Directed Resources	Self Directed Resources	Self Directed Resources	Self Directed Resources
15:30					
16:00					
	Monday	Tuesday	Wednesday	Thursday	Friday
8:00	Quiz 4 Body Cases	Quiz 5 GU	Quiz 6 Neuro	Quiz 7 Neuro	MSK 3
8:30	Quiz 4 Review	Quiz 5 Review	Quiz 6 Review	Quiz 7 Review	
9:00	GU 1	Neuro 1	Neuro 3	MSK 1	OSCE 2
9:30					OSCE 2
10:00	Body Shadowing	Neuro Shadowing	Neuro Shadowing	MSK Shadowing	MSK Shadowing
10:30					
11:00					
11:30					
12:00	Noon Conference				
12:30					
13:00	GU 2	Neuro 2	Neuro 4	MSK 2	Self Directed
13:30					
14:00	Simulation	Simulation	Simulation	Simulation	Simulation
14:30					
15:00	Self Directed Resources	Self Directed Resources	Self Directed Resources	Self Directed Resources	Self Directed Resources
15:30					
16:00					
	Monday	Tuesday	Wednesday	Thursday	Friday
8:00	Quiz 8 MSK	Quiz 9 Nuclear	Quiz 10 IR	Quiz 11 IR	Breast 3
8:30	Quiz 8 Review	Quiz 9 Review	Quiz 10 Review	Quiz 11 Review	
9:00	Nuclear 1	IR 1	IR 3	Breast 1	OSCE 3
9:30					OSCE 3
10:00	Nuclear Shadowing	IR Shadowing	IR Shadowing	Breast Shadowing	Breast Shadowing
10:30					
11:00					
11:30					
12:00	Noon Conference				
12:30					
13:00	Nuclear 2	IR 2	PEDS	Breast 2	Self Directed
13:30					
14:00	Simulation	Simulation	Simulation	Simulation	Simulation
14:30					
15:00	Self Directed Resources	Self Directed Resources	Self Directed Resources	Self Directed Resources	Self Directed Resources
15:30					

Selective requirements: In addition to regular schedule (see above)

- Final examination: Last Friday afternoon of each Block, students will have the weekend to complete the examination to be submitted by Sunday at midnight.
- 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 BUMC/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.
- Medical Student Code of Academic and Professional Conduct:
<https://www.bumc.bu.edu/camed/about/diversity/prs/medical-student-disciplinary-code/>

Didactic Schedule

There will be didactics in the morning and afternoon which will be mandatory attendance for BUMC students. Kaiser students may watch the recorded morning lectures and attend live for afternoon lectures.

Call Schedule

No call for this rotation.

Clerkship Grading

ASSESSMENT OF LEARNING	
Clinical Grade Percentage	33.33%
Shelf/Exam Percentage	33.33%
"Other" Components Percentage	33.33%
CLINICAL GRADE	
Clinical Pass	> 2.5 averaged on the final CSEF
Clinical Fail	< 1.50 on any domain on the final CSEF or < 2.5 averaged on the final CSEF
SHELF EXAM	
Minimum score to pass	No minimum passing score
OTHER	
3 OSCEs	33.33%
FINAL GRADE	

Pass	> 70% total on the OSCEs and Final Summative Exam >2.50 average score in all observed CSEF Domains
Fail	<70% total on the OSCEs and Final Summative Exam <2.5
ASSESSMENT FOR LEARNING	These items must be done by the deadlines provided at orientation to be eligible to receive final grade of honors. Students will receive one standard all-clerkship email reminder. Email sample shown below.
Completing patient encounter logs by the last Sunday of the clerkship block.	
Completing all FOCuS forms by the last Sunday of the clerkship block.	
Completing all clerkship assignments by last Sunday of the clerkship block.	
Completing mid-clerkship form in advance of the meeting at mid-clerkship, and submitting the form by the final Sunday of the clerkship block	
Requesting supervisor (faculty, resident etc.) evaluations from all evaluators must be completed by the last Sunday of the clerkship block.	
ASSESSMENT OF PROFESSIONALISM	To meet professionalism expectations students must meet the following expectations listed below:
Arriving at clerkship didactic sessions on time.	
Evaluations are requested by the last Sunday of the clerkship block.	
Reviewing and responding to e-mail requests from clerkship administration within 2 business days	
Returning borrowed clerkship materials (e.g. pager) by the last business day of the clerkship block.	
Informing clerkship leadership and supervising faculty/residents of absences in advance of the absence (barring extenuating circumstances).	
The following are also expectations of the clerkship and repeated patterns of behavior (after feedback with faculty) will be factored into the professionalism conduct component of the clerkship performance:	
Treating and communicating in a respectful manner with all members of the clerkship team, including clinical and administrative faculty and staff.	
Engaging in the core curriculum and participating respectfully with peers and colleagues at all times.	
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 above in professional comportment sections .	
If there are no professionalism concerns, students will receive the following statement in their summative statement: "This student MET the administrative and clinical professionalism expectations of the clerkship."	
A <u>pattern of behavior</u> as reflected (e.g. in more than one narrative comment) in faculty/resident CSEF (clinical professionalism) and/or events noted by clerkship faculty/administration (administrative professionalism) in one or multiple areas, after providing feedback to student, will result in one of the following statements in the final clerkship evaluation:	
<ol style="list-style-type: none"> 1. This student did not meet the administrative professionalism expectations (SPECIFICS PROVIDED FROM LIST OF ADMINISTRATIVE PROFESSIONALISM BEHAVIORS) and was/was not responsive to feedback. 2. This student did not meet the clinical professionalism expectations, (SPECIFICS PROVIDE FROM CSEF DOMAIN BEHAVIORS) and was/was not responsive to feedback. 3. This student did not meet the clinical and administrative professionalism expectations, (SPECIFICS PROVIDE FROM CSEF DOMAIN BEHAVIORS) and was/was not responsive to feedback. 	
If there are professionalism concerns as detailed in the assessment of learning, assessment of professionalism, or in the CSEF, the student's final grade will be adjusted down to next grade level (e.g. a student who earns a High Pass	

will receive the final grade of Pass, or if a student earns a Pass, they will receive the final grade of Fail). In addition, a student with administrative and/or clinical professionalism concerns will not be eligible to receive final grade honors. An email exchange will be provided to document the professionalism concern and feedback exchanged before a summative statement is placed in the final grade. SAO dean will be cc'd to provide ongoing support.

Sample Email Example

To:

Cc:

Subject:

From: Sonia Ananthakrishnan – sonia.ananthakrishnan@bmc.org

Message Size: 161 KB

Signature: None

Image Size: Medium

This is the current material we have turned in by each student, using BU ID. Please let us know if this information is not correct. If you still have to turn in outstanding material, please do so by designated deadlines.

[illegible]

Standard Clerkship Clinical Grade Procedures/Policies

Clinical Evaluation Procedures

Preceptors will provide clinical evaluations that contain the “raw data” on the student’s clinical performance. You are encouraged to regularly ask for specific behaviorally-based feedback on your clinical skills from your preceptors. However, do not ask them what word grade you will get, as that is a multifactorial process of which the clinical evaluation is one component. Preceptors DO NOT determine the final “word” grade.

1. The CSEF form will be used to numerically calculate your clinical grade: 1 to 5 points (depending on which box is checked) for each domain which will be averaged to give you a final score out of 5. Categories: Needs intensive remediation (1); Needs directed coaching (2); Approaching competency (3); Competent (4) or Achieving behaviors beyond the 3rd year competency criteria (5) to get a final number in each domain. This can be rounded to the nearest number using standard rounding for the CSEF domain and this is the box that should be checked (e.g., if an average of 2.4 then the student should have needs directed coaching (2) checked off). Each CSEF will be weighted based on how long the student worked with each evaluator.

CSEF Clinical Grade Calculations should be made using the 0.01 decimal point in each domain (though the rounded number will be checked off on the final CSEF form) to give a final number.

Any average of <1.50 in any domain = an automatic fail for the clerkship

Any average of < 2.50 in any domain = an automatic pass for the clerkship and a meeting with the MEO for clinical coaching

>2.50 in all domains, standard rounding will be used

<2.00 = Clinical fail which will = a fail for the clerkship

2.00-3.44 = Clinical pass

3.45-4.44= Clinical high pass

>4.45=Clinical honors

The clinical grade will be reported in the CSEF final narrative	
2.	The CSEF clinical score is converted to a final 2-digit percentage that is counted towards the final grade. For example, the final CSEF clinical score average of 4.45 would get converted to 90%. The Final CSEF percentage is used towards the final grade calculation, weighted as indicated in the table above as “Clinical grade percentage” (varies by clerkship).
3.	Primary preceptors at sites with multiple preceptors will collect evaluation data from the other clinicians with whom the student works. The primary preceptor will collate this data and submit the final clinical evaluation.
Shelf Exam Failure & Remediation	
If a student fails their shelf exam, they will receive an Incomplete for the clerkship and retake the exam at the end of the year during the remediation dates.	
Students:	
<ul style="list-style-type: none"> • Will not receive a Fail on their transcript if they pass the reexamination. • Will not be eligible for a final grade of honors - if the final grade calculation would earn the student honors, they will receive high pass as a final grade. • Will still be eligible to receive a clinical honors. • Fails the reexamination, they will have Fail on their transcript and have to remediate the clerkship. 	
Clerkship Failure & Remediation	
If a student fails a third- or fourth-year clerkship, the student will receive a Fail grade and will be required to repeat the clerkship. The grade for the repeated clerkship will be calculated based on the grading criteria outlined in the syllabus for Pass, High Pass, or Honors independent of the prior Fail. The original Fail grade will remain on the transcript. The original summative evaluation narrative will be included in the MSPE, in addition to the summative evaluation from the repeated clerkship.	
If a student fails the remediated clerkship again and the SEPC allows for another remediation, the grade for the repeat clerkship will still be calculated based on the grading criteria outlined in the course syllabus for (Pass, High Pass, or Honors). The original two failures will remain on the transcript. The repeated course will be listed again, and the word (Repeat) will appear next to both course names.	
Grade Review Policy	
The School’s Grade Reconsideration Policy is located in the Policies and Procedures for Evaluation, Grading and Promotion of Chobanian & Avedisian School of Medicine MD Students: https://www.bumc.bu.edu/camed/faculty/evaluation-grading-and-promotion-of-students/	

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 o 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
- **Imaging Atlas of Human Anatomy, 4th edition, by Weir, Abrahams, Spratt, and Salkowski - Reference.**^[?]

Session Learning Objectives and Notes

Please refer to Blackboard