

**RAD 609**  
Radiology Clerkship  
Selective/Elective Clerkship Rotation Syllabus

**Radiology**

Kevin C. Robinson, DO  
Interim Chairperson

Course Director  
Kevin C. Robinson, DO  
Assistant Professor Radiology  
[Robin280@msu.edu](mailto:Robin280@msu.edu)

For all questions regarding content or administrative aspects of this course, contact

Course Assistant  
Beth Clarke  
[clarkem@msu.edu](mailto:clarkem@msu.edu)

**RAD 609 Curriculum Access**

[http://education.rad.msu.edu/Courses/RAD\\_Clerkship/index.html](http://education.rad.msu.edu/Courses/RAD_Clerkship/index.html)

***MSUCOM constantly strives to improve and advance its curriculum through innovation while assuring compliance with current AOA accreditation standards. While major changes are generally instituted at the beginning of each academic year, minor changes may be implemented semester to semester.***

***Please be mindful of the need to read your syllabi before beginning your rotations.***

# Table of Contents

Pre-Approval and Pre-Requisites .....	2
General Description .....	3
Educational Purpose and Goals.....	3
Principal Teaching Methods.....	3
Educational Content.....	3
Principal Ancillary Educational Materials .....	4
Methods of Evaluation.....	5
Testing and evaluation .....	5
Rotation Specific Competency Objectives .....	5
College Program Objectives .....	5
RAD 609 Curriculum Access.....	6
Student Responsibilities.....	6
Rotation Clinical Requirements .....	6
MSU College of Osteopathic Medicine Standard Policies .....	7
ATTENDANCE POLICY.....	7
POLICY FOR MEDICAL STUDENT SUPERVISION .....	8
STATEMENT OF PROFESSIONALISM.....	9
STUDENTS RIGHTS AND RESPONSIBILITIES.....	9
FACULTY RESPONSIBILITIES .....	10
COURSE GRADES.....	10
N-GRADE POLICY .....	10
ROTATION EVALUATIONS .....	10
STUDENT VISA.....	11

## **Pre-Approval and Pre-Requisites**

- An application is required for every selective/elective rotation.
- 30-day advance application approval required (applies to a rotation add, change or cancellation).

## **General Description**

This course is designed to provide the student with an opportunity to actively engage in patient-based, learning experiences under the guidance of a faculty member (preceptor) in collaboration, as appropriate, with residents and/or fellows.

Rotations are typically two weeks, 3 credit hours or four weeks, 6 credit hours in duration. Timeframes for each rotation are decided at least 30 days prior to the beginning of the rotation.

The overall performance of course participants will be evaluated through customary assessment instruments normally employed by the department for core rotations, at the discretion of the instructor of record.

## **Educational Purpose and Goals**

Students must have the opportunity to improve their understanding of the radiological aspect of medicine. The purpose of this rotation is to familiarize the student with common radiological investigational modalities, their indications and basic interpretation. They are expected to gain an understanding of the most appropriate use of radiological examinations in patient management including sequence of examinations, monetary costs, patient inconvenience and discomfort. Additionally, the student will develop an understanding of the impact of diagnostic imaging on the patient and society.

## **Principal Teaching Methods**

1. Students will rotate in the designated radiology department for the designated time of the rotation.
2. Daily assignments involve observing clinical work in the department, review of the components of a cross campus 17-unit on-line course, utilization of; departmental library, MSU library, book, periodical, and digital resources
3. Weekly Seminars and Lectures – Attend appropriate conferences within the institution where radiology content may be presented or discussed. (i.e. Grand Rounds, Tumor Board, CPC, M&M Conferences, Radiology Conference, etc.).
4. Students may participate in the Tuesday Didactic session in East Lansing if approved by the supervising radiologist.
5. Students will observe plain film Conventional Radiology (CR) images, Ultra sonograms, Computed Tomography (CT) scans, Magnetic Resonance Imaging (MRI) images and Nuclear Medicine (NM) and Positron Emission Tomography (PET) scans where available. Additionally, the students may observe the performance of the actual scans and procedures that may take place in the department. The student will observe interpretations as performed by attending radiologists, fellows, and resident's dependent on resources in the designated radiology department.

## **Educational Content**

1. Mix of diseases: The disease mix includes all patients, inpatient and outpatient, who are

undergoing radiological testing.

2. Patient characteristics: Radiology cases include both outpatient and inpatient cases as determined by the patient mix at the host department. Demographic and ethnic mix approximates that of the local community. The extensive socioeconomic diversity of the various participating institutions and patient populations support a stimulating training experience with broad diagnostic challenges.
3. Learning venues: Each of the participating radiology departments provides a stimulating and balanced exposure to the patients in that community.
4. Procedures: The types of radiological examinations and procedures available for observation are listed below:
  - Chest X-Rays
  - Computed Tomography
  - Magnetic Resonance Imaging
  - Ultrasonography
  - Nuclear Imaging
  - Positron Emission Tomography (not available at all sites)
  - Fluoroscopy
  - Mammography
5. Ancillary individuals interacted with may include residents, fellows, technologists, and staff.
6. Duration: The rotation is intended for a 2- 4 week block.
7. Structure: Typically, 8 AM to 5 PM daily. The assignment may vary according to the individual departments' clinical schedule. A schedule of daily assignments will include at minimum:
  - Clinical time 5 days a week.
  - Reading educational materials with daily assignments.
  - Viewing of the MSU Radiology on-line module series and other on-line resources such as the Harvard University Radiology on-line teaching series and the RSNA resources for medical students.
  - Attend hospital and department conference including interdisciplinary and radiology specific conferences.
  - Students are expected to continue to attend any mandatory conferences and didactic sessions of their college during the rotation.

## **Principal Ancillary Educational Materials**

1. Textbooks from which selected reading are assigned:
  - Felson's Principles of Chest Roentgenology, A Programmed Text, Third Ed. by Lawrence R. Goodman
  - Essential Radiology, Second Edition by Richard B. Gunderman
  - Clinical Radiology, The Essentials, Third Edition by Richard H. Daffner
  - Chest, Abdomen, Bone and Clinical Skills, A Problem-Based Text, Third Edition by Amorosa, Novelline, and Squire.
  - Fundamentals of Radiology, Squires
2. Textbooks, current radiology periodicals, and digital teaching series will be available in the onsite Radiology library and may vary somewhat by site.
3. Full service, extended hour, libraries are present at Michigan State University with onsite

medical librarians, web-based searchable medical databases, and standard medical journals in both print and electronic formats. In addition, all MSU students have 24-hour access to the extensive online Michigan State University electronic library, including databases and electronic journals.

## **Methods of Evaluation**

The radiologist supervising student education at each host department completes standard evaluations in place for the clerkship rotations.

## **Testing and evaluation**

It is highly recommended that a radiology related PowerPoint presentation be presented as appropriate at the host department and submitted to the MSU Radiology Department education coordinator for review.

## **Rotation Specific Competency Objectives**

1. To increase the student's knowledge of the various diagnostic imaging modalities offered by a modern radiology department and achieve a better understanding of how to select and sequence the appropriate imaging examinations for specific clinical presentations.
2. To gain additional insight into how diagnostic imaging fits into the multidisciplinary approach to patient care and understand the importance of communication, professionalism, and teamwork between clinicians and radiologists relating to patient management.
3. To offer the student the opportunity to observe diagnostic imaging exams, instill sensitivity towards the patient's needs and apprehension about particular procedures and discuss the results and interpretation with the radiologist.
4. To encourage correlation of diagnostic images with previously learned normal and pathologic anatomy and pathophysiology.
5. Increase the student's understanding and recognition of common processes and pathology available from diagnostic images.
6. Introduce students to the indications, contra-indications, patient preparation, post-procedure care, and relative radiation exposure for various diagnostic imaging exams.
7. Know the relative costs of different diagnostic imaging exams and be able to plan and sequence patient exams that optimizes outcome and cost-effective patient care.
8. Increase the students understanding of image digitization, how variables in digitization influence resolution and the computer's impact on diagnostic imaging (PACS).

## **College Program Objectives**

In addition to the above course-specific goals and learning objectives, this clerkship rotation also facilitates student progress in attaining the College Program Objectives. Please refer to the complete list provided on the MSUCOM website here: <https://com.msu.edu/about-us/accreditation/program-overview>. From this website, you may find the Program Level Educational Objectives more definitively outlined here:

<https://com.msu.edu/application/files/3115/5613/8820/Program-Level-Educational-Objectives->

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### **Student Responsibilities**

Course participants will meet the preceptor on the first day of the rotation at a predetermined location to be oriented to rotation hours, location(s), and expected duties and responsibilities while on-service.

- *The student **will** meet the following **clinical responsibilities** during this rotation:*
  - Students are expected to function collaboratively on health care teams that include health professionals from other disciplines in the provision of quality, patient-centered care.
  
- *The student **will** meet the following **academic responsibilities** during this rotation:*
  - Students are expected to identify, access, interpret and apply medical evidence contained in the scientific literature related to patients health problems.
  - Students are expected to: assess their personal learning needs specific to this clinical rotation, engage in deliberate, independent learning activities to address their gaps in knowledge, skills or attitudes; and solicit feedback and use it on a daily basis to continuously improve their clinical practice.

### **Rotation Clinical Requirements**

Attending Evaluation of Rotation: the determination of a satisfactory attending evaluation is governed by the College's Policy for Retention, Promotion, and Graduation. This evaluation is to be appropriately submitted per the instructions at the end of each evaluation form and is due the final day of the rotation.

Student Evaluation of Rotation: To submit access the "evaluate" link in the Kobiljak schedule (this link will activate on the final Monday of the rotation). The evaluation is due the final day of the rotation.

**IMPORTANT NOTE:** The student will maintain an "Extended" (ET) grade until they have successfully completed all academic and clinical requirements for the course.

# MSU College of Osteopathic Medicine Standard Policies

The following are standard MSUCOM policies across all Clerkship rotations.

## ATTENDANCE POLICY

In order to gain the knowledge and skills to successfully complete the MSUCOM clerkship program, consistent participation/attendance in program activities is essential. Any time off must not interfere with the quality of the rotation.

1. In the event a student needs to be absent from any rotation for the reasons listed below and permissible by the rotation syllabus, students may request time off.
2. Any absence (unless emergent) must be approved in advance (at least 30 days) of absence by the medical education department (student coordinator/director or DME), utilizing the Clerkship Program Excused Absence Request Form. Students must notify rotation team and medical education of emergent/illness absences on day of absence.
3. A student may not be absent more than 2 days on any one 4 week rotation (no time off allowed for rotations of 2 weeks or less) for the reasons below (exception Interview absences or Conference absences as below).
4. Any additional time off any one rotation must be approved by the MSUCOM Instructor of Record for the course the absence will occur.

### **Absence due to interviews:**

For the purpose of interviewing only, a student may be absent 4 days on a 4 week rotation (2 days on a 2 week rotation) during the months of September to January in the OMS year 4. Interview invitations must accompany the Clerkship Program Excused Absence Request Form.

### **Absence due to examinations:**

<b>Examination</b>	<b>Maximum Time Off (includes travel time)</b>
COMLEX USA Level 2 CE/USMLE Step 2 CK/Canadian MCCEE	1 day
MSUCOM COMLEX PE Simulation at MSU	1 day for each scheduled simulation
COMLEX USA Level 2 PE/USMLE Step 2 CS(Canadian Students Only)	2 days
COMAT/SHELF examinations	Travel time and time for exam

### **Personal Day Absence:**

Students are allowed 5 personal days per academic year in OMS 3 and OMS 4. These days are not carried over from third year to fourth year. These are to be used for illness, physician appointments, and special events (weddings, graduations, special anniversary events) and must not exceed 2 days on any 4 week rotation (#3 above). Prolonged illness and bereavement will be handled on a case by case basis between MSUCOM Director of Clerkship and the base

hospital/medical education department. Students must notify rotation team and medical education of emergent/illness absences on day of absence.

Hospital organized community events that might lead to periodic absence from rotations – student participation is encouraged and if base hospital approved, would be considered part of the rotation and not a personal day absence.

Jury duty – when obligated, student participation is not considered a personal day. Court excuses must accompany any absence. If absence is prolonged, this will be handled on a case-by-case basis between the base hospital/medical education and MSUCOM.

**Conference Absence:**

While on required/core rotations, no excused absences for any professional meeting will be allowed unless the student is presenting research in which they have participated.

- a. Appropriate paperwork with proof of presentation and copy of conference agenda must accompany the form.
- b. Time off in this situation will be for travel and presentation only.

While on selective/elective rotations: A student may submit a request for an excused absence to attend one (1) professional meeting, time not to exceed 3 days off rotation. The meeting agenda must accompany the Clerkship Program Excused Absence Request Form.

Personal vacations/family reunions, etc. are not part of this policy. Vacations can be scheduled periodically, provided all curriculum requirements will be met, with the assistance of your Student Support Advocate. Vacations will not be permitted on any core rotation or elective rotation.

**ROTATION SPECIFIC EXCEPTIONS TO THE ABOVE ATTENDANCE POLICY: NONE**

**POLICY FOR MEDICAL STUDENT SUPERVISION**

**Supervisors of the Medical Students in the Clinical Setting**

The MSUCOM curriculum includes required clinical experiences in a variety of clinical learning environments. The role of the student is to participate in patient care in ways that are appropriate for the student’s level of training and experience and to the clinical situation. The student’s clinical activities will be under the supervision of licensed physicians. This supervising physician may delegate the supervision of the medical student to a resident, fellow, or other qualified healthcare provider, however, the supervising physician retains full responsibility for the supervision of the medical students assigned to the clinical rotation and must ensure his/her designee(s) are prepared for their roles for supervision of medical students.

The physician supervisor and his/her designee(s) must be members in good standing in their facilities and must have a license appropriate to his/her specialty of practice and be supervising the medical student within that scope of practice as delineated by the credentialing body of the facility.

**Level of Supervision/Responsibilities**

Clinical supervision is designed to foster progressive responsibility as a student progresses through



the curriculum, with the supervising physicians providing the medical student the opportunity to demonstrate progressive involvement in patient care. MSUCOM students will be expected to follow clinical policies of the facility regarding medical records and clinical care. Medical student participation in patient history/physical exam, critical data analysis, management, and procedures will include factors, but not limited to:

- The students demonstrated ability
- The students level of education and experience
- The learning objectives of the clinical experience

First and second year medical students will be directly supervised at all times (supervising physician or designee present or immediately available).

Third and fourth year medical students will be supervised at a level appropriate to the clinical situation and student's level of experience. For some tasks, indirect supervision may be appropriate for some students. Direct supervision would be appropriate for advanced procedures. Supervising physicians will provide medical students with timely and specific feedback on performance. The supervising physician will complete a mid-rotation evaluative discussion with the medical student. Supervising physicians will complete a summative evaluation and are encouraged to contact the course/clerkship director with any gaps in student performance.

Medical students with any concern regarding clinical, administrative, and educational or safety issues during his/her rotation will be encouraged to contact the supervising physician or clerkship/course director.

## **STATEMENT OF PROFESSIONALISM**

Principles of professionalism are not rules that specify behaviors, but guidelines that provide direction in identifying appropriate conduct. These principles include the safety and welfare of patients, competence in knowledge and skills, responsibility for consequences of actions, professional communication, confidentiality, and lifelong learning for maintenance of professional skills and judgments. Professionalism and professional ethics are terms that signify certain scholastic, interpersonal and behavioral expectations. Among the characteristics included in this context is the knowledge, competence, demeanor, attitude, appearance, mannerisms, integrity and morals displayed by the student to faculty, peers, patients and colleagues in other health care professions. Students are expected to conduct themselves at all times in a professional manner and to exhibit characteristics of a professional student.

## **STUDENTS RIGHTS AND RESPONSIBILITIES**

Each individual student is responsible for their behavior and is expected to maintain standards of academic honesty. Students share the responsibility with faculty for creating an environment that supports academic honesty and principles of professionalism. Proper relationship between faculty and student are fundamental to the college's function and this should be built on mutual respect and understanding together with shared dedication to the education process. It is a fundamental belief that each student is worthy of trust and that each student has the right to live in an academic environment that is free of injustice caused by dishonesty. While students have an obligation to assist their fellow students in meeting the common goals of their education, students have an equal obligation to maintain the highest standards of personal integrity.

## **FACULTY RESPONSIBILITIES**

It is the responsibility of the college faculty to specify the limits of authorized aid (including but not limited to exams, study aids, internet resources and materials from senior students) in their syllabi, and it is the responsibility of students to honor and adhere to those limits. Course instructors shall inform students at the beginning of the semester of any special criteria of academic honesty pertinent to the class or course.

It is the responsibility of the clinical faculty to provide students with ongoing feedback during rotation upon request. Clinical faculty are generally recommended (though not required) to limit student assigned duty hours from 40 to 60 hours weekly (and not exceeding 60 hours). Both faculty and students are to be treated fairly and professionally in order to maintain a proper working relationship between trainer and trainee.

## **COURSE GRADES**

- **P-Pass** – means that credit is granted and that the student achieved a level of performance judged to be satisfactory according to didactic and clinical performance by the department.
- **N-No Grade** – means that no credit is granted and that the student did not achieve a level of performance judged to be satisfactory according to didactic and clinical performance by the department.
- **ET-Extended Grade** – means that a final grade (“Pass” or “No Grade”) cannot be determined due to one or more missing course requirements. Once all course requirements have been completed, received, and processed, the ET grade will be changed to a final grade. An “ET” will NOT remain on a student’s transcript.

## **N-GRADE POLICY**

Students who fail this rotation will have to repeat the entire rotation and fulfill all requirements.

## **ROTATION EVALUATIONS**

**Attending/Faculty/Resident Evaluation of Student:** Students are responsible for assuring that his/her clinical supervisor receives the appropriate evaluation form. Forms can be accessed via the “Attending Evaluation” link in the student’s Clerkship schedule.  
[http://hit-filemakerwb.hc.mus.edu/Clerkship/login\\_student.html](http://hit-filemakerwb.hc.mus.edu/Clerkship/login_student.html).

Students should assertively seek feedback on his/her performance throughout the course of the clinical rotation. Students should also sit down and discuss the formal evaluation with the clinical supervisor. Note that the clinical supervisor and the DME from the rotation hospital are required to sign the form.

Any evidence of tampering or modification while in the possession of the student will be considered “unprofessional behavior” resulting in an “N” grade.

**Student Evaluation of Rotation:** Students will submit their rotation evaluations electronically at the

conclusion of every rotation by accessing the evaluation system at:  
[http://hit-filemakerwb.hc.msu.edu/Clerkship/login\\_student.html](http://hit-filemakerwb.hc.msu.edu/Clerkship/login_student.html)

## **STUDENT VISA**

Michigan State University is committed to providing equal opportunity for participation in all programs, services, and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities (RCPD) at 517-884-RCPD, or on the web at [www.rcpd.msu.edu](http://www.rcpd.msu.edu). Once a student's eligibility for (clinical and/or testing) accommodation has been determined, the student may be issued a Verified Individualized Services and Accommodation (VISA) form. Students must present this VISA form to the Clerkship Team ([COM.Clerkship@msu.edu](mailto:COM.Clerkship@msu.edu)), A-332 East Fee Hall, at the start of the semester in which they intend to use their accommodations (for tests, projects, labs, etc.). Accommodation requests received after this date will be honored whenever possible.

If updates or modifications to an existing VISA form are made after the semester begins, it is the responsibility of the student to submit an updated version to the Clerkship Team ([COM.Clerkship@msu.edu](mailto:COM.Clerkship@msu.edu)) if he or she intends to use the new accommodation going forward.

## **Syllabus Addendum (Due to Alteration in Rotations as a Result of COVID-19) Clerkship Required Core Rotation - Radiology (RAD 609)**

*If you are removed from the clinical environment at any point during this rotation for Coronavirus-related issues, immediately notify the Clerkship Team at [COM.Clerkship@msu.edu](mailto:COM.Clerkship@msu.edu). You must have approval from the Assistant Dean for Clerkship Education, Dr. Susan Enright, in order to complete a virtual component of this rotation for any reason.*

Requirements of the syllabus have been modified as a result of alternate training. Please understand that new items may be added as new curriculum is found and/or developed. The Course Assistant will update and provide any new additions to this document to you via email if new requirements are added. Please note the below:

### **1. Rotation Requirements listed in the syllabus that will remain requirements of the course:**

- a. Students may participate in the Tuesday Didactic session in East Lansing if approved by the supervising radiologist.

### **2. New Rotation Requirements of the course that are not listed in the syllabus:**

- a. Introduction to Radiology: An Online Interactive Tutorial (<https://www.med-ed.virginia.edu/courses/rad/>)
  - i. THORACIC
    1. Chest radiology
    2. ICU films
    3. Plain Chest Radiograph
    4. Cross Sectional Thorax
  - ii. ABDOMINAL
    1. GI Radiology
    2. GU Radiology
    3. Emergency Body CT
    4. Plain Abdominal
    5. Cross sectional Abdomen
  - iii. MSK
    1. Skeletal Trauma
  - iv. NEURO
    1. Head CT
  - v. 12. PET Basics
- b. (25) questions the final day of rotation- 2-week rotations  
(50) questions the final day of rotation- 4-week rotations

### **3. Rotation Requirements listed in the syllabus that will not be requirements of the course:**

- a. Principal Teaching Methods
  - i. Students will rotate in the designated radiology department for the designated time of the rotation.

- ii. Daily assignments involve observing clinical work in the department, review of the components of a cross campus 17-unit on-line course, utilization of departmental library, MSU library, book, periodical, and digital resources.
  - iii. Weekly Seminars and Lectures – Attend appropriate conferences within the institution where radiology content may be presented or discussed. (i.e. Grand Rounds, Tumor Board, CPC, M&M Conferences, Radiology Conference, etc.).
  - iv. Student observations of plain film Conventional Radiology (CR) images, Ultrasonograms, Computed Tomography (CT) scans, Magnetic Resonance Imaging (MRI) images and Nuclear Medicine (NM) and Positron Emission Tomography (PET) scans where available. Additionally, the students may observe the performance of the actual scans and procedures that may take place in the department. The student will observe interpretations as performed by attending radiologists, fellows, and resident's dependent on resources in the designated radiology department.
  - v. Clinical Clerkship Rotation Evaluation
- b. Attending/Faculty/Resident Evaluation of Student