

# **RAD 612**

## **Interventional Radiology Clerkship Selective/Elective Clerkship Rotation Syllabus**

### **Radiology**

Kevin C. Robinson, DO  
Interim Chairperson

Course Director  
Bruce Wolf, DO  
Assistant Professor Radiology  
[wolfbr@msu.edu](mailto:wolfbr@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)

effective July 2020- June 2021

#### **RAD 612 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 .....	3
General Description .....	3
Educational Purpose and Goals.....	3
Principal Teaching Methods.....	3
Educational Content.....	4
Principal Ancillary Educational Materials .....	4
Methods of Evaluation.....	5
Testing and evaluation .....	5
Rotation Specific Competency Objectives .....	5
College Program Objectives .....	6
RAD 612 Curriculum Access.....	6
Student Responsibilities.....	6
Rotation Clinical Requirements .....	7
MSU College of Osteopathic Medicine Standard Policies .....	7
ATTENDANCE POLICY.....	7
POLICY FOR MEDICAL STUDENT SUPERVISION .....	9
STATEMENT OF PROFESSIONALISM.....	10
STUDENTS RIGHTS AND RESPONSIBILITIES.....	10
FACULTY RESPONSIBILITIES .....	10
COURSE GRADES.....	10
N-GRADE POLICY .....	11
ROTATION EVALUATIONS.....	11
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).
- Successful completion of RAD 609 or RAD 610.

## **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**

Interventional Radiology (IR) is a branch of medicine that diagnoses and treats a variety of disease throughout the body using percutaneous methods guided by radiologic imaging. The unique clinical and invasive nature of practice in vascular and interventional radiology requires special training and specific skills. The purpose of this rotation is to familiarize the student with the signs and symptoms of disorders amenable to diagnosis and/or treatment by interventional radiology techniques. The significance of the symptoms must be understood as well as the pathophysiology and natural history of the disorders. The student will be exposed to the indications for and contraindications to basic vascular and interventional procedures, and will observe the clinical and technical aspects of implementation. They will gain a basic understanding of clinical evaluation and follow up, imaging methods, including percutaneous image guided procedures, and the fundamentals of radiation physics, radiation biology, and radiation worker and patient protection.

### **Principal Teaching Methods**

1. Students will rotate in the designated radiology department for the designated time of the rotation.
2. Student will shadow resident and attending radiologists within interventional radiology. There may be a pre-test and a post-test to document learning. The student will also be required to prepare and present a 5 to 10-minute PowerPoint presentation on an agreed upon topic, generally an interesting case encountered during the rotation.

3. Students will be expected to attend the various conferences and didactic lectures provided by the department (i.e. Grand Rounds, Tumor Board, CPC, M&M Conference, etc.) They will also attend interdepartmental conferences involving radiology. They will be required to sign in at daily conferences to document attendance.
4. Rotation Directors will complete all evaluations at the end of the rotation.

## **Educational Content**

1. Mix of diseases: The disease mix includes all patients, inpatient and outpatient, who are undergoing interventional radiology procedures.
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 include:
  - Angiography
  - Angioplasty and stent
  - Venography
  - Venous Access
  - Biliary Drainage
  - Nephrostomy
  - Abscess Drainage
  - Percutaneous Biopsy
  - Embolization
  - Percutaneous spine intervention (if available)
  - Pain management (if available)
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: The day typically begins at 7:00 a.m. and ends at 4:00 p.m. Most of the day will be spent in the reading room and procedural suites. Independent study using departmental and web resources may be permitted during the afternoons.
8. A schedule of daily assignments will include at minimum:
  - Clinical time 5 days a week.
  - Reading educational materials with daily assignments.
  - 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:
  - Vascular and Interventional Radiology: The Requisites, Second Edition by John Kaufman and Michael Lee.

- Vascular and Interventional Imaging: Case Review Series, Third Edition by Saad, Khaja & Vedantham.
  - Atlas of Vascular Anatomy, Second Edition by Renan Uflacker
  - Abrams' Angiography: Interventional Radiology, Third Edition by Geschwind and Dake
  - Vascular and Interventional Radiology, Second Edition by Karim Valji
  - Introduction to Vascular Ultrasonography, Fifth Edition by Zwiebel and Pellerito
  - Handbook of Interventional Radiologic Procedures, Fifth Edition by Kandarpa, Machan and Durham
  - Teaching Atlas of Interventional Radiology: Non-Vascular Interventional Procedures (Teaching Atlas Series), First Edition by Saadoon Kadir
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. Become familiar with the appropriateness of patient selection for a requested basic procedure through review of available history, imaging, laboratory values and proposed/expected outcomes of the procedure.
2. Have a basic understanding of history/physical findings or treatment scenarios that would require pre-procedure assistance from other specialty disciplines such as cardiology, anesthesia, surgery and internal medicine.
3. Have observed the informed consent process, after a review with the patient of the procedure(s), risks, benefits and alternative therapeutic options/procedures. Additionally, will have observed and practiced the pre-procedure physician exam and evaluation.
4. Have a basic understanding of the abnormalities and physical signs/symptoms that need immediate attention during a procedure.
5. Have a basic understanding of percutaneous access selection for biopsies/drainages for multiple imaging modalities.
6. Have a basic understanding of vascular access for device placement as well as endovascular intervention.
7. Have introductory knowledge of endovascular therapies and indications.

8. Have introductory knowledge of equipment available for and indicated for interventions (i.e. catheters, guidewires, embolization materials, etc.).
9. Have observed post procedure recover and patient management.
10. Have an understanding for follow-up and indications for follow-up imaging.
11. Have a basic understanding of certain pharmacological considerations in this setting:
  - Drug/contrast reactions
  - Antibiotic therapy
  - Conscious sedation
  - Anesthesia/analgesia
  - Anticoagulation

## 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-KSA.pdf>.

## RAD 612 Curriculum Access

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

## 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). 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.