

RAD 612
Interventional Radiology

CLERKSHIP ELECTIVE ROTATION

DEPARTMENT OF RADIOLOGY
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EFFECTIVE AUGUST 2, 2021 TO JULY 31, 2022

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At MSUCOM, we are constantly working to improve our curriculum and to meet new AOA accreditation guidelines. We need to meet the challenges of modern medicine that force us to innovate. While changes will generally be instituted at the beginning of the school year, changes may also be implemented semester to semester.

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

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INTRODUCTION AND OVERVIEW

ELECTIVE COURSE SCHEDULING

Preapproval

- This course does not require preapproval from the IOR. The student should follow the below directions for elective course confirmation and enrollment.

Required Prerequisites

- This course requires the following prerequisite course(s):
 - RAD 609

Course Confirmation and Enrollment

- The student must be an active student at Michigan State University College of Osteopathic Medicine (MSUCOM).
- Student must complete five core rotations prior to any elective rotation.
- The student must receive MSUCOM confirmation and enrollment prior to beginning any elective rotation.
 - Once the student receives rotation acceptance from the host site, students must provide the elective application and host site approval to COM.Clerkship@msu.edu for MSUCOM confirmation and scheduling.
 - MSUCOM confirmation and enrollment is complete when the rotation is visible on the student's schedule.
 - MSUCOM confirmation must occur at least 30 days in advance of the rotation.

ROTATION FORMAT

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.

GOALS AND OBJECTIVES

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 (<https://com.msu.edu/>) and in the Student Handbook.

ROTATION REQUIREMENTS

REQUIREMENT	SUBMISSION METHOD	DUE DATE (Please refer to D2L for actual due dates)
Attending Evaluation of Clerkship Student	Can be accessed via the “Attending Evaluation” link in Kobiljak online schedule. Email completed evaluation to COM.Clerkship@msu.edu	Last Day of Rotation
Student Evaluation of Clerkship Rotation	Can be accessed and submitted via the “Student Evaluation” link in Kobiljak online schedule.	Last Day of Rotation

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

ROTATION EVALUATIONS

Attending 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 Kobiljak online Clerkship schedule.

Students should actively 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.

Students should keep a copy of the evaluation and leave the original with the Medical Education Office at the clinical training site where that office will review, sign, and forward the completed form to the COM Clerkship Team. Any evidence of tampering or modification while in the possession of the student will be considered “unprofessional behavior” and will be referred to the MSUCOM Spartan Committee Clearinghouse for resolution, per MSUCOM’s Common Ground Framework for Professional Conduct or to the Committee on Student Evaluation (COSE).

Grades are held until all rotation requirements, including evaluation forms, are received. Be sure you are using the correct form.

Student Evaluation of Clerkship Rotation

Students will submit their rotation evaluations electronically at the conclusion of every rotation by accessing their online evaluation system at:

http://hit-filemakerwb.hc.msu.edu/Clerkship/login_student.html

Unsatisfactory Clinical Performance

The Instructor of Record and/or the Assistant Dean for Clerkship Education will review/investigate a student's performance on a rotation when a concern is raised by the supervisor(s), and when the Attending Evaluation of Clerkship Student contains any below expectation marks within the professionalism area, any unsatisfactory written comments, or a total of two or more below average marks on the evaluation.

Professionalism concerns, as well as accolades, will also be referred to the MSUCOM Spartan Committee Clearinghouse for resolution, per MSUCOM's Common Ground Framework for Professional Conduct.

CORRECTIVE ACTION PROCESS

There is no Corrective Action offered on this course. As determined by the Instructor of Record, the student will receive an N grade for the course if all assignments are **not completed** successfully by (the Tuesday) 2 days after the last day of rotation at 11:59pm (with the exception of the Attending Evaluation). Additionally, a letter of unprofessional behavior for late submission of assignments will be sent to the MSUCOM Spartan Community Clearinghouse.

BASE HOSPITAL REQUIREMENTS

Students are responsible for completing all additional requirements set by the hospital/clinical site in which the student is completing the rotation. Students are not responsible for reporting results of requirements outside the ones listed above to the college.

STUDENT RESPONSIBILITIES AND EXPECTATIONS

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.

MSU COLLEGE OF OSTEOPATHIC MEDICINE STANDARD POLICIES

The following are standard MSUCOM policies across all Clerkship rotations.

ATTENDANCE POLICY

OVERVIEW

Michigan State University College of Osteopathic Medicine (MSUCOM) requires student participation in clerkship rotations and clinical activities with consistent attendance to acquire the skills and knowledge that are necessary for successful program completion. Students are expected to take minimal time off outside of vacations already appearing in schedules and should only request time off in the rare events and circumstances outlined below.

Specific courses may have additional absence requirements from this general clerkship policy, and it is the student's responsibility to adhere to these requirements according to the respective course syllabus.

GENERAL POLICY

- All absences from rotations must be **excused absences** obtained by completing the *Clerkship Program Excused Absence Request Form*.
 - Appropriate signatures must be obtained from both the attending physician and the student coordinator at the rotation site.
 - MSUCOM Assistant Dean for Clerkship Education must approve absences for prolonged illnesses, bereavement, research presentations/conferences, or absences exceeding the maximum time off any one rotation.
 - Once appropriate approval signatures are obtained, forms should be maintained for your records in the event they are requested or required at a later date.
- **Unexcused absences** are absences taken without the proper completion of the *Clerkship Program Excused Absence Request Form*, or absences outside of those listed in the Clerkship Attendance Policy. Unexcused absences are considered unprofessional and will result in a report to the Spartan Community Clearing House and/or the MSUCOM Committee on Student Evaluation (COSE).

Length of rotation	Maximum number of days off	
4 weeks	2 days	Should an absence exceed these limits, the student is responsible for requesting additional days from the Assistant Dean for Clerkship Education via email (com.clerkship@msu.edu) prior to the absence.
2 weeks	0 days	

Exception for residency interviews from October to January in Year 4 only

A fourth-year student may be absent a total of 4 days on any 4-week rotation, or 2 days on any 2-week rotation during the months of October-January during Year 4 for interview purposes only. If interview absences exceed these totals, the student must request additional days off from the MSUCOM Instructor of Record (IOR) for the course/rotation by submitting a *Clerkship Program Excused Absence Request Form* to the Course Assistant (CA). Contact information for the IOR and CA are found on the first page of the respective MSUCOM course syllabus.

Absence Type	Qualifications	Maximum number of days off	Details	Required Approval from Assistant Dean for Clerkship Education
Personal Day	Illness Medical/Dental appointments Wedding, family graduations (additional reasons must be discussed with the Asst Dean for Clerkship Education prior to request)	5 total days per year (individual events must comply with the max of 2 days off any 4-week rotation)	Vacations must be planned during allotted vacation time in schedule. Vacations are not acceptable personal day absences.	No
Jury Duty	Court documentation must accompany the <i>Clerkship Program Absence Request Form</i> .	N/A	Jury duty, when obligated, is not considered a personal day absence	Yes
Hospital-organized community events	Example: Special Olympic Physicals	N/A	These events would be considered part of the rotation and not a personal day absence.	No
Examination	COMLEX USA Level 2 CE/USMLE Step 2 CK/Canadian MCCEE	1 day		No
	COMAT/NBME shelf examinations	Time required to complete exam	Students should be reporting to rotation before/after examination	No
Conference/Research Presentation	Research presentation on core rotation	Travel and presentation time only	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. Required for request to Asst Dean for Clerkship Education; conference agenda, location, date of presentation, invitation, or confirmation of presentation by conference staff, proposed dates of absence.	Yes
	Conference or research presentation while on an elective rotation	3 days on a 4-week elective rotation	Student must submit <i>Clerkship Program Excused Absence Request Form</i> and copy of conference agenda to the Assistant Dean for Clerkship Education to attend one (1) professional meeting on a 4-week rotation. Students cannot miss rotation days for a conference during a 2-week elective rotation.	Yes
Prolonged Illness, Bereavement, Maternity Leave	Medical related absence or bereavement	TBD	Students-contact the Assistant Dean for Clerkship Education to discuss time off rotations	Yes

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 student's demonstrated ability
- The student's 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.

STUDENT 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.

MSU Email

To facilitate communication from faculty and staff to students, students are required to have a functioning MSU email address. Students are responsible for checking their MSU email accounts daily and maintaining their MSU mailboxes so that messages can be received.

Forwarding MSU email to another email account or failure to check email are not valid excuses for missing a deadline or other requirements of the clinical education program.

Further, students must use secure email when working in a hospital, clinic, or other health care setting if discussion of patient information is involved. MSUNet (msu.edu) email is secure; many web-based email systems including Hotmail, Gmail and Yahoo are not.

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 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 by the department according to the student's didactic and clinical performance.

ET/Extended Grade – means that a final grade ('Pass' or 'No Grade') cannot be determined due to one or more missing course requirements. The ET grade will be changed to a final grade once all the completed course requirements have been submitted to and processed by MSUCOM (either to the department or Clerkship Team). An 'ET' grade will NOT remain on a student's transcript.

N/No Grade – means that no credit is granted, and that the student did not achieve a level of performance judged to be satisfactory by the department according to the student's didactic and clinical performance.

N Grade Policy

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

STUDENT EXPOSURE PROCEDURE

A form has been developed by the University Physician to report incidents of exposure, e.g. needle sticks, mucous membrane exposure, tuberculosis exposure, etc., and may be found on the Clerkship Medical Education page of the MSUCOM website [here](https://com.msu.edu/current-students/clerkship-medical-education) (<https://com.msu.edu/current-students/clerkship-medical-education>).

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. Once a student's eligibility for (clinical and/or testing) accommodation has been determined,

the student may be issued a **Verified Individualized Services and Accommodations** (VISA) form. Students must present this VISA form to the Clerkship Team (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 if he or she intends to use the new accommodation going forward.

SUMMARY OF GRADING REQUIREMENTS

Requirement	Submission Method	Honors Designation	Pass	Extended Grade	No Pass
Attending Evaluation of Clerkship Student	Can be accessed via the “Attending Evaluation” link in Kobiljak online schedule. Email completed evaluation to COM.Clerkship@msu.edu	N/A			
Student Evaluation of Clerkship Rotation	Can be accessed and submitted via the “Student Evaluation” link in Kobiljak online schedule.	N/A			