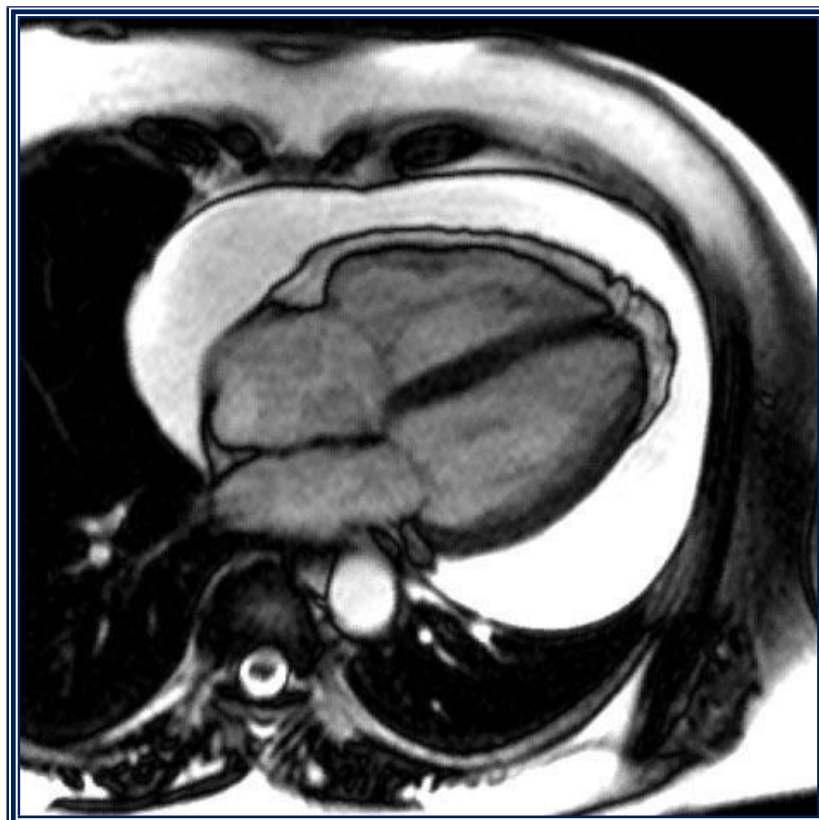




Magnetic Resonance Imaging Program



Clinic Handbook Semester II

2020-2021 Academic Year

Imaging Science Education Programs
MRI**Course Outline Semester II Clinic**

Course:	Applied MRI Procedures II (MRIT 420)
Clock Hours:	611
Semester:	Spring 2021
Prerequisite:	MRIT 410
Instructor(s):	Various Clinical Instructors
Room(s):	HSC Siemens Verio 3T; HSC Siemens Aera 1.5T; HSC Siemens Avanto 1.5T Mobile Unit; POC Siemens Aera 1.5T; POC GE Architect 3T UTC Siemens Aera 1.5T; RNI Siemens Prisma 3T
Time:	<i>Monday – Friday: Whenever the student is not in the classroom</i> <i><u>Clinic Day Rotation Hours:</u></i> <i>7:30 am – 4:00 pm</i> <i><u>Clinic Evening Rotation Hours (Scanner Dependent):</u></i> <i>11:00 am – 7:00 pm or 12:00 pm – 8:00 pm or 3:00 pm – 11:00 pm</i>

Course Description:

This is the second of two courses that offers the student clinical education in MRI. This course takes place in the MRI Departments of the Health Science Center (HSC), Physician Office Center (POC), University Town Centre (UTC), and the Rockefeller Neuroscience Institute (RNI). All clinical rotation sites identified are conducted within WVUH owned and operated clinical facilities. All facilities are located within 5 miles of the main campus at Ruby Memorial Hospital.

This course incorporates one-month rotations through clinical areas that include 1.5T & 3T magnets. The student rotates evening clinical shifts (*two weeks per month from February to May*) to further develop their confidence and competency. The student also receives instruction and experience in regard to technologist responsibilities for shifts with reduced staffing. The student is instructed in prioritizing patient examination requests and in handling emergency situations. This final course in clinical education serves to finalize the student's development and prepares them to enter the professional work force.

Course Objectives:

1. Abide by the dress code and other policies as stated in the Student Handbook
2. Develop proficiency and confidence in the performance of routine MRI examinations by functioning under direct supervision
3. Identify when to modify a protocol and successfully perform the modification
4. Properly screen patients for contraindications to MR
5. Ensure patient safety by correlating surgical, accident, and occupational history
6. Maintain a clean, comfortable and safe environment
7. Employ proper precautions to prevent disease transmission
8. Demonstrate how to properly prepare a patient for the requested exam
9. Ensure that professional performance and competence is reflected throughout an exam
10. Ensure proper setup of MR coils, equipment, table accessories and cushioning
11. Achieve a minimum of 86% on each Comprehensive examination as well as the overall clinic grade
12. To complete the minimum number of Semester II Clinical Competencies

Clinical Grading Calculation:

The student's grade consists of several components, each utilizing a different mechanism to assure a complete and comprehensive evaluation of clinical performance. The following components and weighted averages are utilized:

<u>Component</u>	<u>Weighted Average</u>
Daily Log Sheets	5%
Clinical Preceptor Points	10%
Performance Checklists	10%
Evaluations	10%
Clinical Competencies	30%
Comprehensive Exams	15%
Required Competencies	20%

Clinical Grading Scale:

93 – 100	A
86 – 92	B
78 – 85	C
70 – 77	D
0 – 69	F

*****STUDENTS MUST COMPLETE MRIT 420 WITH A MINIMUM GRADE OF 86% "B" TO PROCEED TO GRADUATE*****

Daily Log Sheets:

Each day, students will report the procedures which were observed or performed on the Daily Log sheet in the Trajecsys Clinical Report System.

The following participations levels are used when filling out the Daily Log sheet:

1. **Observed (Level 1):** Student may help with patient care and setting up of room but only watches and learns while the MRI technologist performs the entire exam.
2. **Assisted (Level 3):** Student may help with patient care and setting up of room. Also, the student will sit at the console and perform the exam with the MRI technologist. The MRI technologist will provide assistance or prompting during the exam.
3. **Performed Independently (Level 5):** Student may help with patient care and setting up of room. Also, the student will sit at the console and perform the entire exam independently. The MRI technologist will only observe and not provide any assistance during the exam.

Delinquent (more than 5 days) log sheets will result in a 5% reduction (on each occurrence) in this component of the clinic grade. Daily Log Sheets carry a weighted average of 5% towards the overall clinic grade.

After observing, having been assisted by the MRI technologist and independently performing the required repetitions, a clinical competency exam will be administered for each procedure identified on the clinical competency form.

Competency categories include, but are not limited to, the procedures from the following sites/systems:

- Head & Neck
- Spine
- Thorax
- Abdomen & Pelvis
- Musculoskeletal (MSK)
- Special Imaging Procedures or Ancillary Procedures

Clinical Preceptor Points:

Prior to mid-term and at the end of each Semester, the Clinical Preceptor will evaluate each student using the “Clinical Preceptor Points Evaluation Form”. Each category in the form is worth 1 to 5 points and the total points are divided by the total number of categories (15) to get a value between 1 and 5. Clinical Preceptor Points carry a weighted average of 10% towards the overall clinic grade.

Performance Checklist:

Performance Checklists or “PCs” are found in the Trajecsyst Clinical Report System for each Semester. Select the appropriate checklist and endeavor to meet the objectives and achieve an acceptable rating on each. At the end of each rotation, ensure the technologist you are evaluating completes the checklist on Trajecsyst. An acceptable rating for each item on the checklist earns the student one (1) point. Performance Checklists carry a weighted average of 10% towards the overall clinic grade.

Weekly Student Performance Evaluations:

At the completion of each week in the assigned clinical area, an “Entry-Level Student Evaluation Form” or the regular “Student Evaluation Form” needs to be completed by your Staff Technologist on Trajecsyst. This evaluation represents his/her estimation of your overall performance. *The “Entry-Level” form will only need to be used during July to September.*

After your Mid-Term Evaluation, the regular “Student Evaluation” form will be used. Each individual evaluation is scored from 1 to 5 points (*1 = Unsatisfactory; 2 = Needs Improvement; 3 = Average; 4 = Above Average; 5 = Excellent*) and the combined average of each section will determine your weekly evaluation points. These points will be included in the student’s overall Clinical Performance Evaluation category, which carries a weighted average of 10% towards the overall clinic grade. If more than one evaluation is submitted per rotation, the average of the points will be counted. Failure to complete one of these evaluations after each clinical rotation will result in the student receiving no points for the category.

Staff Clinical Instructor Evaluations:

At the end of each rotation, the student is required to complete a “Staff Clinical Instructor Evaluation” on Trajecsyst. These will be used to evaluate the quality of the technologist’s clinical instruction. These evaluations will be worth one (1) point towards the student’s evaluated performance. Failure to complete one of these evaluations after each clinical rotation will result in the student receiving no points for the category. These points will be included in the student’s overall “Clinical Performance Evaluation” category, which carries a weighted average of 10% towards the clinic grade.

Clinical Competencies:

After completing a minimum number (*e.g., two*) of Level 5 (Performed Independently) repetitions of a specific examination under direct supervision on a patient, the student may request to be evaluated on that specific examination. The evaluation form for this is the “Competency Evaluation” section in Trajecsyst and is to be filled out by the Clinical Preceptor, Program Director / Education Coordinator or any credentialed technologist. Successful completion of a Competency exam **does not** qualify a student to perform that particular examination under indirect supervision.

Each clinical competency evaluation is worth from 0 to 100 points. These evaluations carry a weighted average of 30% towards the clinic grade. Ten (10) additional Clinical Competencies are due at mid-term of the semester, for a total of thirty (30). Ten (10) additional Clinical Competencies are due at the end of the semester, for a total of forty (40). The complete list of “Clinical Competencies” is located on Trajecsyst and your Clinical Competency Requirements Form.

Comprehensive Evaluations:

Prior to mid-term and at the end of each Semester, the Program Director or the Clinical Preceptor will select an exam for the student to complete as a comprehensive assessment. “Comprehensive Exams” are selected from those exams in which the student has already completed a Competency Evaluation. Each “Comprehensive Exam” is a percentage determination with the average of all “Comprehensive Exams” having a weighted value of 15% towards the clinic grade. A minimum of 86% is needed to successfully pass each Comprehensive Exam.

Required Competencies:

“WVUH Required Competency” studies are to be completed by the mid-term & the end of each semester. These required competencies are worth 20% of your overall clinic grade. See the 2020-21 Clinic Guidelines for complete list of “WVUH Required Competencies”.

2020-2021 MRI Education Clinic Guidelines

The 1st week of rotation on a new scanner should be getting familiar with the scanning area by getting patients, screening them, giving IV's, learning about how to manipulate the controls of the scanner and which coils to use. You will be given a Clinical Orientation Checklist to complete during that first week. After the 1st week is finished, then you can start learning how to scan on your new scanner.

The Clinical Preceptor will be the main technologist doing your graded Competencies and the Program Director/Education Coordinator will be doing your Comprehensive Exams at Midterm and Finals. However, the staff techs (Clinical Instructors) may also grade you on Competencies or Comprehensives. Also, staff techs or the Clinical Preceptor will primarily do the check-off/repetitions.

These WVUH Required Competency studies are to be completed for the mid-term of each semester and by the end of each semester. These required competencies are worth 20% of your overall clinic grade.

- **Semester I – 14 Competencies**

(6 by Midterm + 8 by Finals):

- Brain
- IACs
- Vascular Head MRA (Intra)
- Cervical
- Lumbar
- Shoulder
- Knee
- Ankle (Hindfoot)
- Diffusion/DTI
- Brain Perfusion
- Send to PACS
- Verify Exam
- EPIC Documentation
- Image Post-Processing
(MIP Reformation, MPR, Subtraction)
- Perfusion Vitrea Post-Processing
- DTI Post-Processing
- Brain/IAC Post-Processing

- **Semester II – 16 Competencies**

(8 by Midterm + 8 by Finals):

- Orbits
- Pituitary
- Vascular Neck (Extra)
- Soft Tissue Neck
- Trauma Spine
- Thoracic
- Liver
- MRCP
- Pancreas
- Kidneys
- Female Soft Tissue Pelvis
- Male Soft Tissue Pelvis
- Wrist
- Elbow
- Hip
- Foot (Midfoot/Forefoot)
- Arthrogram
- Long Bones (Upper Extremity)
- Long Bones (Lower Extremity)

West Virginia University Hospitals
Imaging Science Education Programs / MRI

Clinical MRI - MRIT 420 - Semester II

Flowsheet

Name: **John Doe**

Semester: **Spring 2021 (Mid Term)**

Grade: **99.41%**

Max points = 5

Clinical Preceptor Points (Wt. Avg. 10%)

4.73

Student # **1**

Performance Checklists (Wt. Avg. 10%) and Evaluations (Wt. Avg. 10%)

Clinical Area	Rotation	P.C.	Evaluation	Tech Eval.
UTC Week 1	1		4	1
UTC Week 2	1		5	0
UTC Week 3	1		4.7	1
UTC Week 4	1	1	4	1
HSC Aera Week 1	1			
HSC Aera Week 2	1			
HSC Aera Week 3	1			
HSC Aera Week 4	1	1	5	1
HSC 3T Week 1	1		4.93	1
HSC 3T Week 2	1		4.67	0
HSC 3T Week 3	1		5	1
HSC 3T Week 4	1	1	5	1
POC Aera Week 1	1		4.8	1
POC Aera Week 2	1			
POC Aera Week 3	1			
POC Aera Week 4	1			
POC GE Week 1	1			
POC GE Week 2	1			
POC GE Week 3	1			
POC GE Week 4	1			
HSC Mobile Week 1	1			
HSC Mobile Week 2	1			
HSC Mobile Week 3	1			
HSC Mobile Week 4	1			
RNI Week 1	1			
RNI Week 2	1			
UTC Week 1	2			
UTC Week 2	2			
UTC Week 3	2			
UTC Week 4	2			
HSC Aera Week 1	2			
HSC Aera Week 2	2			
HSC Aera Week 3	2			
HSC Aera Week 4	2			
HSC 3T Week 1	2			
HSC 3T Week 2	2			
HSC 3T Week 3	2			
HSC 3T Week 4	2			
POC Aera Week 1	2			
POC Aera Week 2	2			
POC Aera Week 3	2			
POC Aera Week 4	2			
POC GE Week 1	2			
POC GE Week 2	2			
POC GE Week 3	2			
POC GE Week 4	2			
HSC Mobile Week 1	2			
HSC Mobile Week 2	2			
HSC Mobile Week 3	2			
HSC Mobile Week 4	2			
RNI Week 1	2			
RNI Week 2	2			

Clinical Competencies (Wt. Avg. 30%) and Required Competencies (Wt. Avg. 20%)

	Clin. Comp	Req. Comp.	Notes
Head & Neck			
Brain	100	1	9/2/2020
IACs	97	1	11/18/2020
Pituitary	98	1	10/5/2020
Orbits	99	1	1/2/2021
Cranial Nerves (Non IACs)			
Vascular Head MRA (Intra)	100	1	2/2/2021
Vascular Head MRV			
Brain Perfusion	100	1	10/1/2020
Brain Spectroscopy			
Soft Tissue Neck			
Vascular Neck (Extra)	96	1	2/3/2021
Spine			
Cervical	100	1	8/25/2020
Thoracic	100	1	1/6/2021
Lumbar	95	1	9/2/2020
Trauma Spine	100	1	2/1/2021
Sacrum-Coccyx			
Sacroiliac (SI) Joints			
Brachial Plexus			
Thoraco-Lumbar			
Thorax			
Chest (Non Cardiac)			
Breast	100	1	11/30/2020
MRA Thoracic			
ABD & Pelvis			
Liver	94	1	1/8/2021
Pancreas	99	1	1/8/2021
MRCP	100	1	2/10/2021
Adrenals			
Kidneys	100	1	2/10/2021
Enterography			
Vascular Abdomen (MRA Renals, etc.)			
Female Soft Tissue Pelvis (e.g., Uterus)			
Male Soft Tissue Pelvis (e.g., Prostate)			
MSK			
Elbow			
Hand			
Finger / Thumb			
Wrist			
Hip			
Bony Pelvis			
Ankle (Hindfoot)	99	1	
Shoulder	89	1	12/2/2020
Scapula			
Sternum / SC Joints			
Foot (Midfoot/Forefoot)			
Long Bones (Upper Extremity)			
Long Bones (Lower Extremity)			
Knee	96	1	9/12/2020
Temporomandibular Joint (TMJ)			
MR Arthrography	100	1	1/15/2021

Additional Imaging Procedures		Notes
Brain / IAC Post-processing		11/18/2020
Cardiac (Morph./Func. Or Perf.)		
CINE (e.g., CSF Flow Study, TMJs)		
Diffusion/DTI	99	1
DTI Post-processing	100	1
EPIC Documentation	100	1
Extremity MRA / Run-off		
fMRI		
Gamma Knife		
Image Post-processing	100	1
(MIP Reformations, MPR, Subtraction)		
Perfusion Vitrea Post-processing	100	1
Send to PACS	100	1
Verify Exam	100	1
Daily QA/QC		
ACR Weekly QA/QC		

Comprehensive Examinations (Wt. Avg. 15%)

	Date	Exam	Grade
Examination #1	2/28/2021	Brain	97%
Examination #2			

FOR INSTRUCTOR USE ONLY

Cumulative Completion Data

as of

Date:

3/12/2021

Enter # required to-date (do not enter points)

Performance Checklist	3
Evaluations	10
Clinical Competencies	30
Comprehensive Examinations	1
Required Competencies	22

Clin. Comp. Completed	Req. Comp. Completed
27	27



Imaging Science Education Programs
MRI

Student: Student

Clinical Preceptor Points Evaluation

	Sem I Mid-Term	Sem I End	Sem II Mid-Term	Sem II End
Quality of Work	4	4	5	5
Knowledge and Care of Equipment	4	5	5	5
Ability to Follow Directions	5	5	4	5
Contribution to Department Workload	5	4	4	5
Initiative	3	4	4	5
Punctuality & Attendance (Documentation)	5	5	4	5
Appearance	5	5	5	5
Professional Demeanor	5	5	4	5
Cooperation and Teamwork	5	5	4	5
Attitude Toward Criticism	5	5	5	5
Ethical Reasoning	5	5	4	5
Relationship with Instructors and Staff	5	5	5	5
Attitude Toward Profession	5	5	5	5
Handles Stressful Situations	4	5	5	5
Completed all Clinical Instructor Evaluations	5	5	5	5
TOTAL	4.67	4.80	4.53	5.00

	(1-5 points)
Scale:	1 = Unsatisfactory 2 = Needs Improvement 3 = Average 4 = Above Average 5 = Excellent

West Virginia University Hospitals
Imaging Science Education Programs / MRI
Clinical Grade Calculation

Name: **John Doe**

Semester: **Spring 2021 (Final)**

Date: **June 4, 2021**

	Points Achieved		Total Points		Percentage		% Weight		Weighted % Average
Clinical Preceptor Points	4.73	out of	5	=	95%	x	10%	=	9.5%
Performance Checklists	6	out of	6	=	100%	x	10%	=	10.0%
Evaluations	112.9	out of	132	=	86%	x	10%	=	8.6%
Clinical Competencies	3951	out of	4000	=	99%	x	30%	=	29.6%
Comprehensive Exams				=	99%	x	15%	=	14.8%
Required Competencies	36	out of	30	=	120%	x	20%	=	24.0%
Daily Log Sheets				=	100%	x	5%	=	5.0%

John Doe 's grade is based on the completion of:

22 weeks of clinical rotations to-date / semester.

40 of **40** clinical competencies.

36 of **30** required competencies.

Percent Grade = **101.45%**

Letter Grade = **A**

Comments:

Instructor's Signature: _____

Student's Signature: _____

Date: _____

Grading Scale:

93% -100% = A
 86% - 92% = B
 78% - 85% = C
 70% - 77% = D
 <70% = F



Magnetic Resonance Imaging

1. Introduction

Candidates applying for certification and registration under the primary eligibility pathway are required to meet the Professional Education Requirements specified in the *ARRT Rules and Regulations*. ARRT's *Magnetic Resonance Imaging Didactic and Clinical Competency Requirements* are one component of the Professional Education Requirements.

The requirements are periodically updated based upon a [practice analysis](#) which is a systematic process to delineate the job responsibilities typically required of magnetic resonance imaging (MRI) technologists. The result of this process is a [task inventory](#) which is used to develop the clinical competency requirements (see section 4 below) and the content specifications which serve as the foundation for the didactic competency requirements (see section 3 below) and the examination.

2. Documentation of Compliance

To document that the Didactic and Clinical Competency Requirements have been satisfied by a candidate, the program director (and authorized faculty member if required) must sign the ENDORSEMENT SECTION of the *Application for Certification and Registration* included in the *Primary Eligibility Pathway Handbook*.

Candidates who complete their educational program during 2020 or 2021 may use either the 2017 Didactic and Clinical Competency Requirements or the 2020 requirements. Candidates who graduate after December 31, 2021 must use the 2020 requirements.

3. Didactic Competency Requirements

The purpose of the didactic competency requirements is to verify that individuals had the opportunity to develop fundamental knowledge, integrate theory into practice and hone affective and critical thinking skills required to demonstrate professional competency. Candidates must successfully complete coursework addressing the topics listed in the [ARRT Content Specifications](#) for the MRI examination. These topics would typically be covered in a nationally-recognized curricula published by organizations such as the ASRT or SMRT. Educational programs accredited by a mechanism acceptable to ARRT generally offer education and experience beyond the minimum requirements specified in the content specifications and clinical competency documents.

4. Clinical Competency Requirements

The purpose of the clinical competency requirements is to verify that individuals certified and registered by the ARRT have demonstrated competency performing the clinical activities fundamental to a particular discipline. Competent performance of these fundamental activities, in conjunction with mastery of the knowledge and cognitive skills covered by the MRI examination, provides the basis for the acquisition of the full range of procedures typically required in a variety of settings. Demonstration of clinical competence means that candidates have performed the procedures independently, consistently, and effectively during their formal education. The following pages identify the specific procedures for the clinical competency requirements. Candidates may wish to use these pages, or their equivalent, to record completion of the requirements. The pages do NOT need to be sent to the ARRT.



4.1 General Performance Considerations

4.1.1 Patient Diversity

Demonstration of competence should include variations in patient characteristics such as age, gender, and medical condition.

4.1.2 Simulated Performance

The ARRT requirements specify that general patient care procedures may be simulated as designated in the specific requirements below. Simulations must meet the following criteria:

- The candidate must competently demonstrate skills as similar as circumstances permit to the cognitive, psychomotor, and affective skills required for performing the procedures on patients;
- The program director must be confident that the skills required to competently perform the simulated task will generalize or transfer to the clinical setting, and, if applicable, the candidate must evaluate related images.

Examples of acceptable simulation include: demonstrating CPR on a mannequin; performing venipuncture by demonstrating aseptic technique on another person, but then inserting the needle into an artificial forearm or grapefruit.

4.1.3 Elements of Competence

Demonstration of clinical competence requires that the program director or the program director's designee has observed the candidate performing the procedure independently, consistently, and effectively during the course of the candidate's formal educational program.

4.2 Magnetic Resonance Imaging Specific Requirements

As part of the education program, candidates must demonstrate competence in the clinical procedures identified below. These clinical procedures are listed in more detail in the following sections.

- Seven mandatory general patient care procedures
- Eight mandatory MRI safety requirements
- 17 mandatory MR imaging procedures
- 11 of the 30 elective MR imaging procedures and
- Seven mandatory MRI quality control procedures



4.2.1 General Patient Care Procedures

Candidates must have demonstrated competence in all seven patient care procedures listed below. The procedures should be performed on patients whenever possible, but simulation is acceptable if state or institutional regulations prohibit candidates from performing the procedures on patients.

General Patient Care Procedures	Date Completed	Competence Verified By
CPR		
Vital Signs (Blood Pressure, Pulse, Respiration)		
Sterile Technique		
Standard Precautions		
Transfer of Patient		
Care of Patient Medical Equipment (e.g., Oxygen Tank, IV Tubing)		
Venipuncture		

4.2.2 MRI Safety Requirements

Candidates must demonstrate competence in all eight areas of MRI Safety listed below.

MRI Safety Requirements	Date Completed	Competence Verified By
Screening Patients, Personnel, and Non-Personnel for MR Safe, MR Conditional, and MR Unsafe Devices and Objects		
Identify MR Safety Zones		
Static Magnetic Field (e.g., Translational and Rotational Forces)		
Radiofrequency Field (e.g., Thermal Heating [SAR], Coil Positioning, Patient Positioning, Insulation)		
Gradient Magnetic Fields (e.g., Inducted Voltages, Auditory Considerations)		
Communication and Monitoring Considerations (e.g., Sedated Patients, Verbal and Visual Contact, Vital Signs)		
Contrast Media Safety (e.g., NSF, Renal Function)		
Other MRI Safety Considerations (e.g., Cryogen Safety, Fire, Medical Emergencies, Laser Alignment Lights)		

* The abbreviation "e.g.," is used to indicate that examples are listed in parenthesis, but that it is not a complete list of all possibilities.



4.2.3 MR Imaging Procedures

Candidates must demonstrate competence in the 17 mandatory procedures listed on the following page. For the mandatory procedures, candidates must be evaluated while scanning actual patients. Candidates are also required to demonstrate competence for 11 of the 30 elective procedures. Elective procedures should be performed on patients; however, up to five of the elective procedures may be performed on volunteers, as long as your institution has a policy that assures the protection of both the volunteer's and the institution's interests.

When performing the MR imaging procedures, the candidate must independently demonstrate appropriate:

Patient skills including:

- evaluation of requisition and/or medical record
- identification of patient
- documentation of patient history including allergies
- safety screening
- patient education concerning the procedure
- patient care and assessment
- preparation of examination room
- Standard Precautions
- preparation and/or administration of contrast media
- MRI safety procedures and precautions
- patient discharge with post-procedure instructions

Technical and procedural skills including:

- selection of optimal imaging coil
- patient positioning
- protocol selection
- parameter selection
- image display, networking, and archiving
- post-processing
- documentation of procedure and patient data in appropriate records
- completion of acquisition

Evaluation skills including:

- analysis of the image for technical quality
- demonstration of correct anatomic regions
- proper identification on images and patient data
- recognition of relevant pathology
- exam completeness



4.2.3 MR Imaging Procedures (continued)

Head and Neck	Mandatory	Elective	Date Completed	Patient or Volunteer	Competence Verified By
Brain	✓			Patient	
IACs	✓			Patient	
Pituitary	✓			Patient	
Orbits		✓			
Cranial Nerves (Non IACs)		✓			
Vascular Head MRA	✓			Patient	
Vascular Head MRV		✓			
Brain Perfusion		✓			
Brain Spectroscopy		✓			
Soft Tissue Neck		✓			
Vascular Neck	✓			Patient	
Spine					
Cervical	✓			Patient	
Thoracic	✓			Patient	
Lumbar	✓			Patient	
Spinal Trauma		✓			
Sacrum-Coccyx		✓			
Sacroiliac (SI) Joints		✓			
Brachial Plexus		✓			
Thorax					
Chest (Non Cardiac)		✓			
Breast		✓			
Vascular Thorax		✓			
Abdomen and Pelvis					
Liver	✓			Patient	
Pancreas		✓			
MRCP	✓			Patient	
Adrenals		✓			
Kidneys		✓			
Enterography		✓			
Vascular Abdomen		✓			
Female Soft Tissue Pelvis (e.g., Uterus)		✓			
Male Soft Tissue Pelvis (e.g., Prostate)		✓			



4.2.3 MR Imaging Procedures (continued)

Musculoskeletal	Mandatory	Elective	Date Completed	Patient or Volunteer	Competence Verified By
Temporomandibular Joints (TMJs)		✓			
Sternum/Sternoclavicular (SC) Joints		✓			
Shoulder	✓			Patient	
Long Bones (Upper Extremity)		✓			
Elbow		✓			
Wrist	✓			Patient	
Hand		✓			
Finger/Thumb		✓			
Bony Pelvis		✓			
Hip	✓			Patient	
Long Bones (Lower Extremity)		✓			
Knee	✓			Patient	
Ankle	✓			Patient	
Foot	✓			Patient	
Arthrogram		✓			
Additional Imaging Procedures					
Image Post-Processing (MIP Reformation, MPR, Subtraction)	✓				
CINE (e.g., CSF Flow Study, TMJs)		✓			



4.2.4 MRI Quality Control Procedures

Candidates must demonstrate competence in the seven quality control activities listed below. The first four procedures are performed on a QC phantom.

MRI Quality Control Procedures	Date Completed	Competence Verified By
Signal to Noise Ratio		
Center Frequency		
Transmitter Gain or Attenuation		
Geometric Accuracy		
Equipment Inspection (e.g., Coils, Cables, Door Seals)		
Monitor Cryogen Levels		
Room Temperature and Humidity		

