

**Health Careers Certification**

**SYLLABUS**

**FOR**

**RADIOLOGY AIDE**

08/14

**Total Hours**

705 hours

**Radiology Aide Career Major Description**

This career major included the study of radiology. The student is given an overview of the radiologic technology department and types of patients they may encounter in the radiology department. The student will also learn immobilization techniques that will be used when assisting the radiologic technologist and gain knowledge necessary to be able to discuss various methods of radiation protection for personnel in the radiography department and patient by utilizing the cardinal rules of radiation protection. Students will be able to describe several devices used to detect and measure exposure to ionizing radiation. The student will learn the hands-on aspect of patient care, such as aseptic and non-aseptic techniques, transporting the patient as well as radiographic room responsibilities for the radiology aide.

Upon completion of this career major the student will receive school certification for Radiology Aide.

# After completing the Core Curriculum Courses including: [Health Careers Core Curriculum,](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/d68323ef11d4296ee1667d7400ecb5ab.html) [Core Medical Terminology,](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/18cd6a4067cf70970f66ae6745e2592b.html) [Anatomy and Physiology,](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/f53c8ffaa5a2b4f14c69588ba5e37592.html) and [Core Healthcare Provider CPR and First Aid the course sequence is as follows:](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/0ea269ebfc6a4123df1bf288f0f24251.html)

***Introduction to Radiologic Science***

**Course Description**

This course is designed to begin preparing the student for quality participation as a member of the professional team delivering health care to the patient-consumer. The student is given an overview of the radiologic technology department and administration. The student is also given an overview of the different types of patients they may encounter in the radiology department. The student will also learn immobilization techniques that will be used when assisting the radiologic technologist

**Course Length**

15 hours

**Knowledge and Skills**

1. Explain the use of radiation in medicine.
2. Describe the discovery of x-rays.
3. Define terms related to radiologic technology.
4. Explain the career opportunities within the profession of radiologic technology.
5. Identify various specialties within a radiology department.
6. Describe the typical responsibilities of the members of the radiology team.
7. Discuss the roles of other members of the health care team.
8. Identify the role of the radiology aide.
9. Respond appropriately to clinical situations.
10. Differentiate accreditation, certification, and representation functions of various professional organizations.
11. Describe the organizations that carry out the professional aspects of a specific radiologic technology area of specialization.
12. Describe the relationship of various radiologist and physicist organizations with radiologic technology.
13. Define critical thinking and problem solving.
14. Discuss the importance of critical thinking and problem solving in the radiologic sciences.
15. Describe the role of critical thinking in clinical, ethical, and technical decision making.
16. Apply the steps involved in problem solving.
17. Analyze situations that require critical thinking.
18. Identify patient care situations that use critical-thinking and problem-solving skills.
19. Appreciate the need for continued development of critical-thinking and problem-solving skills for radiologic science professionals.
20. Provide an overview of the administration of a hospital radiology department and the structure of hospital organization.
21. Describe how the radiology department fits into the hospital world.
22. Appreciate the role of the radiology administrator.
23. Define the organization of a hospital and a hospital department of radiology or medical imaging.
24. Explain the functions of management, including planning, organizing, staffing, directing, controlling, and coordinating.

***Radiation Protection for the Aide***

**Course Description**

This course includes knowledge necessary for the student to be able to discuss various methods of radiation protection for personnel in the radiography department and patient by utilizing the cardinal rules of radiation protection. Students will be able to describe several devices used to detect and measure exposure to ionizing radiation.

**Course Length**

15 hours

**Knowledge and Skills**

1. Differentiate between the various advisory groups and regulatory agencies involved in developing radiation protection standards.
2. Explain the concept of dose limits related to the use of radiation.
3. Describe the ALARA concept.
4. Explain the basic principles of reducing exposure to radiation.
5. Discuss the various methods used to protect the patient and health care worker from excessive radiation.
6. Demonstrate the various methods used to protect the patient and health care worker from excessive radiation.
7. Describe several devices used to detect and measure exposure to ionizing radiation.
8. Discuss the precautions that should be taken to minimize potential fetal exposures.
9. Describe the three cardinal rules for reducing radiation exposure.

***Patient Care for the Radiology Aide***

**Course Description**

This course covers the technical, hands-on aspect of patient care, such as aseptic and non-aseptic techniques, transporting, and immobilizing the patient.

**Course Length**

90 hours

**Knowledge and Skills**

1. Demonstrate a range of immobilization techniques.
2. Explain the importance of quality communication with the patient.
3. Describe reduction of patient radiation exposure by using proper immobilization methods.
4. Apply immobilization techniques in routine situations.
5. Use immobilization devices effectively.
6. Describe trauma immobilization techniques as they pertain to specific anatomic involvement.
7. Explain the importance of establishing rapport with pediatric patients.
8. Use various methods of pediatric immobilization.
9. Describe appropriate application of immobilization techniques pertinent to geriatric patients.
10. Discuss the significance of homeostasis.
11. Explain the mechanisms that adapt and maintain homeostasis.
12. Explain the implication of abnormal vital signs.
13. Explain the indications for administering oxygen therapy.
14. Differentiate high-flow and low-flow oxygen-delivery devices.
15. Describe the use of a sterile drape to establish a sterile field.
16. Establish a sterile field.
17. Maintain a sterile field.
18. List the steps in a surgical scrub.
19. Describe the procedures for gowning and gloving.
20. List the basic principles of sterile technique.
21. Describe the procedure for changing a dressing.
22. Provide care to a patient with a tracheotomy.
23. Provide care to a patient with chest tubes.
24. Describe the care of a patient with a urinary catheter.
25. Contrast intravenous and intra-arterial lines.
26. Explain the technologist’s role for assisting the physician in pacemaker insertion.
27. Describe the insertion, care, and removal of nasogastric tubes.
28. Assist a patient with the use of the male urinal.
29. Assist a patient with a bedpan.
30. Describe the common types of enemas.
31. Describe the procedure for a cleansing enema.
32. State the need for patient teaching regarding the barium enema – preparation, procedural, and post procedural.
33. Differentiate between the single-contrast and double-contrast barium enemas.
34. Describe the procedure for a colostomy barium enema.
35. State the needs of a colostomy patient undergoing a barium enema.
36. Recognize common definitions and nomenclature associated with pharmacology.
37. Recognize the various classifications of drugs.
38. Describe the actions, indications, and precautions related to various drugs.
39. List the five rights of drug administration.
40. List the methods of drug administration.
41. Prepare intravenous drugs for injection.
42. Describe documentation procedures related to drug administration.
43. State the purpose of contrast media.
44. Differentiate between low and high subject contrast.
45. Compare negative and positive contrast agents.
46. Name the general types of contrast media used for specific radiographic procedures.
47. List the serious complications of the administration of barium sulfate.
48. Match specific procedures to particular patient instructions.
49. Explain the importance of osmosis as it relates to various effects of iodinated ionic contrast media.
50. Discuss the advantages of nonionic iodinated contrast media.
51. Differentiate among the major adverse effects of various contrast agents.
52. Recognize clinical symptoms of adverse reactions to iodinated contrast media to the level of treatment required.
53. Relate the patient history to the possibility of adverse reactions.
54. Introduce the concept of radiopharmaceuticals.
55. Identify potential hazards in the radiographic room.
56. Identify components of IVs.
57. Identify reasons for nonfunctioning IVs.
58. Identify signs of infiltrated IVs.
59. Place gown on and remove gown from patient receiving IV therapy.
60. Identify situations in which patients require assistance.
61. Supervise an independent transfer.
62. Move patient safely from bed to wheelchair
	* Stand and pivot: active assisted
	* Stand and pivot: passive assisted
	* Swing
	* Sliding board
63. Transfer a patient from a stretcher to the radiographic table.
64. Transfer a patient from a wheelchair to the radiographic table.
65. Transport patient via wheelchair.
66. Transport patient via stretcher.
67. Transport patient on oxygen therapy.
68. Assist patient to and from the bathroom.
69. Give and remove a bedpan.
70. Give and remove a urinal.
71. Maintain patient’s urinary catheter.
72. Identify the radiology aide’s role in assisting professional staff with critically injured or ill patients.
73. Respond to signs and symptoms of patient distress.
74. Follow hospital emergency code procedures.

***Imaging Equipment Processing and PACS***

**Course Description**

This course will cover the basics of darkroom safety, setting up the film processor, cleaning and maintaining the processor, patient film identification, and entering patient data.

**Course Length**

60 Hours

**Knowledge and Skills**

Discuss primary, scatter, and remnant radiation.
-Describe the fundamentals of image production.
-Discuss radiographic quality in terms of density, contrast, recorded detail. and distortion.
-List the major factors that influence radiographic quality.
-Differentiate sharpness of detail from visibility of detail.
-Calculate radiographic exposure factors.
-Describe film/screen imaging, fluoroscopic imaging, and digital imaging.
-Explain radiographic equipment manipulation.
-List the generic components of a radiographic system.
-Locate the x-ray tube in a radiographic room.
-Describe the purpose of the collimator and its importance in radiation protection.
-Describe the various types of radiographic tables and how they are operated.
-Identify the major controls on the radiographic system control console.
-Describe the various types of radiographic tube stands and how they are manipulated.
-Describe the various planes of x-ray tube movement and how they are controlled.
-Explain the purpose of the upright wall Bucky system and cassette holder.
-Discuss the concept of alignment of the various radiographic system components.
-Demonstrate the functions of various radiographic system components
-Describe the movement of the fluoroscopic tower.
-Describe the two major types of mobile systems.
-Explain the process of film development.
-Describe the synergistic properties of automatic processor reducing agents.
-Identify the primary chemical and its function for each of the developer and fixer agents.
-Explain the process of film fixation.
-Explain the washing and drying process of film archiving.
-Describe the functions of the subsystems of an automatic processor.
-Discuss the design of a radiographic darkroom, including entrances, pass boxes, centralized and decentralized plans, and ventilation.
-Explain the rationale for the use of silver recovery systems.
-Compare the advantages and disadvantages of metallic replacement, electrolytic, chemical precipitation, and resin silver recovery units.
-Describe the difference between analog and digital computers.
-Describe the difference between programs and data.
-State reasons why binary machine code is used in place of other languages.
-Describe the basic function of a central processing unit, a read-only memory, and random-access memory.
-Describe the basic function of various memory storage and input and output devices.
-Explain the basic function of an array processor.
-Describe the process of digital image data acquisition.
-Describe the effects of frequency, contrast, and noise on digital image quality.
-Explain the function of digital image window level and width controls.
-Identify parts and functions of the processor.
-Prepare processor for operation.
-Maintain darkroom integrity.
-Restock film.
-Flash radiograph with patient identification.
-Process radiographs.
-Reload and clean cassettes.
-Match radiographs with correct jacket and requisition.

***Clinical Practice for the Radiology Aide***

**Course Description**

This course includes both simulated clinicals in the classroom and a clinical rotation in a health care facility. The course begins with an orientation to clinical education. Radiographic room responsibilities for the radiology aide are then discussed and the student may be tested on several skills either in the classroom lab and/or at a clinical site.

**Course Length**

120 hours

**Knowledge and Skills**

1. Explain the purpose of the clinical education component.
2. Define terms that relate to the clinical education component.
3. Describe the physical and human resources necessary for effective clinical education.
4. Explain the importance of adhering to major clinical education policies.
5. Discuss the methods used in effectively teaching clinical course content.
6. Describe methods of assessment that can be used to measure cognitive, psychomotor, and affective aspects of clinical education.
7. Summarize the clinical education process.
8. Practice radiation safety
9. Demonstrate the functions of various radiographic system components.
10. Identify directional terms and abbreviations.
11. Identify types of radiographic procedures and common radiographs.
12. Identify radiographic cassettes by size and type.
13. Prepare the patient and his or her records for the exam.
14. Set up room for various exams.
15. Mix the barium preparation.
16. Assist radiographer to position patients for radiographs.
17. Identify surfaces in the radiographic room that must be cleaned after each patient exam.
18. Clean radiographic room, observing body substance precautions.
19. Restock supplies and linens.
20. Answer phones and record messages.
21. Assist with scheduling procedures.
22. Identify common filing systems.
23. File radiographs accurately.
24. Demonstrate professionalism in manner and image.
25. Apply ethical standards and be respectful of the patient's rights.
26. Exhibit an ability to get along with staff in the externship and be able to show courtesy and willingness to share the workload.
27. Maintain confidentiality of verbal, written, and electronically-generated information.
28. Respond positively to supervision and guidance.
29. Exhibit effective verbal and nonverbal communication.
30. Demonstrate the use of grammatically-correct written and verbal communication.
31. Provide information related to methods of health promotion and disease prevention.
32. Apply fundamental principles of aseptic techniques and infection control complying with quality assurance practices.
33. Prepare and maintain fundamental principles in coordination of patient care.
34. Be able to demonstrate proficiency of the required clinical procedures listed in the competency profile.
35. Be able to recognize and respond to emergencies.
36. Comply with HIPPA guidelines.
37. Perform radiology aide duties needed for effective department management and coordination of patient care.

**Instructional Procedures**

This course consists of a self-paced curriculum using the listed curriculum resources as a guide moving sequentially through the texts and student manual. Complete and turn in student manual activity sheets and written evaluation for units I through V and turn in review questions from radiology text chapter 1 through 24. Upon completion of text and manual student is required to practice lab skills until clinical skills are at competency level prior to progressing to the next section. The instructor will periodically counsel with the student concerning progression through the course.

**Curriculum Resources**

Missouri Department of Secondary Education Instructional Material Laboratory **Radiology Aide** University of Missouri-Columbia 50-1141-S

Adler **Introduction to Radiology Sciences and Patient Care 4th ed. (2007)** Saunders Elsevier ISBN 1416031944 (Including Practice Standards)

**Radiology Aide Skills Standards**

1. Describe and demonstrate professional behavior, ethical and legal standards, roles and functions, and communication Skills

2. Process films and maintain and operate the darkroom

3. Demonstrate basic patient care

4 .Prepare and maintain radiographic room and supplies

5. Demonstrate professional interpersonal and communication skills

**EVALUATION OF STUDENT ACHIEVMENTS**

 For the purpose of evaluations, points will be earned in the following areas; weighted by

 percentages shown:

 A. Attendance/Work Ethic 25% of overall grade

 B. Written assignments 15%

 C. Quizzes 20%

 D. Projects/presentations 15%

 E. Tests 25%

**Students will be required to maintain 90% class attendance for the preceding 9 week session to be eligible for clinical assignment. In addition, 90% clinical attendance must be maintained for a passing clinical evaluation.**

Clinical skills must be completed at competency level prior to progressing to the next section.

Clinical evaluations will be entered as a test grade for each occupational area.

Final grades will be assigned on the following scale:

 90-100%=A Incomplete=I

 80-89%=B No Grade=NG

 70-79%=C Withdraw Passing=W/P

60-69%=D Withdraw Failing=W/F

Students will be kept informed of their grades and notified when examinations are scheduled. Quizzes will be unannounced. Students are encouraged to make an appointment with the instructor (before or after class, during break times and/or during lunch break) if he/she does not understand or disagrees with the grade earned. The rationale for scheduling an appointment is so the student and instructor may have a one-on-one discussion without unnecessary interruptions. The instructor will critique tests and student assignments in a classroom setting.