

# Course Abstract

*If you need accommodations due to a disability, contact Disability Services in Edison Hall Room 100, 732.906.2546.*

*To foster a productive learning environment, the College requires that all students adhere to the Code of Student Conduct which is published in the college catalog and website.*

## **Course ID and Name: RAD 128 – Basic Medical Principles**

### **Department: Radiography Education**

Chairperson or Course Coordinator: Patricia Luck

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**Prerequisites:** None

**Co-requisites:** RAD 141, RAD 142, RAD 171, and RAD 190

### **Course Description:**

This course introduces the student to the basic principles necessary for clinical practice. Course content includes general concepts in patient care and assessment, medical terminology, medical-legal and ethical aspects, vital signs, infection control, medication administration, pharmacology, patient communication, and developing critical thinking skills.

### **General Education Status:**

**Credits: 4**

**Lecture Hours: 4**

**Lab Hours: 0**

### **Learning Outcomes:**

1. Apply the principles of medical terminology through etymological analysis of medical terms.
2. List an overview of the healthcare delivery system to include credentialing and radiology department organization.
3. Discuss the legal and ethical principles of health care.
4. Describe examples of effective communication with patients.
5. Describe safe techniques for patient moving and transferring, using the principles of good body mechanics.
6. Describe medical asepsis, sterilization, and the factors involved in the cycle of infection.
7. State the normal values for vital signs used to assess the patient.
8. Identify the most common types of oxygen administration equipment and explain their potential hazards.
9. Describe appropriate age-specific strategies for pediatric and geriatric patients.
10. Describe the equipment used, and methods of administering medication
11. Identify methods of surgical aseptic technique.

12. Describe the radiographer's response to various acute medical situations.

**Course Content Areas:**

1. Medical Terminology
2. Etymological Word Analysis
3. Federal and State Regulatory Agencies
4. Professional Organizations
5. Medical-Legal Aspects of Clinical Practice
6. Ethics
7. Patient Records
8. Communication and Patient Education
9. Body Mechanics, Patient Transfer and Positioning
10. Patient Care and Assessment
11. Infection Control
12. Vital Signs and Oxygen Administration
13. Pediatric Imaging
14. Geriatric Imaging
15. Medication Administration
16. Pharmacology
17. Acute Situations/Medical Emergencies
18. Preparations, Scheduling, and Sequencing
19. Trauma and Mobile Radiography
20. Surgical Aseptic Technique
21. Developing Critical Thinking Skills

**Textbook Requirement:**

- (1) Torres' Patient Care in Imaging Technology  
Dutton, Andrea; Ryan, TerriAnn, 9<sup>th</sup> Edition 2019 ISBN: 978-1-4963-7866-8
- (2) Medical Terminology for Health Care Professionals  
Rice, Jane, 9<sup>th</sup> Edition 2018 ISBN: 978-0-13-449534-7

## Grading Standard:

<b>A</b>	<b>94-100</b>
<b>A-</b>	<b>90-93.99</b>
<b>B+</b>	<b>88-89.99</b>
<b>B</b>	<b>84-87.99</b>
<b>B-</b>	<b>80-83.99</b>
<b>C+</b>	<b>78-79.99</b>
<b>C</b>	<b>75-77.99</b>
<b>D</b>	<b>70-74.99</b>
<b>F</b>	<b>&lt;70</b>

## Success Criteria:

The student must earn a minimum course grade of “C” (75%) or higher in order to continue in sequencing of radiography courses. The following course grade distribution will be utilized:

Homework/Class Assignments	15%
Quizzes	20%
Mid-term Examination	30%
Final Examination	<u>35%</u>
Total-	100%

## Program Policy and Regulation Compliance:

- Students are expected to attend all classes.
- Any student found cheating or plagiarizing will, at minimum, receive a grade of zero for that test or assignment. The instructor reserves the right to fail the student for the course and/or pursue further action including the enforcement of the “Code of Student Conduct.” Students are encouraged to become familiar with the “Code of Student Conduct” as described in the College Catalog- <http://www.middlesexcc.edu/registrar/images/cosc.pdf>. Cheating and/or plagiarism will not be condoned and will result in a course grade of “F”.
- No make-up tests will be given. If someone arrives late for a test and a student has handed in a test, that person will not be permitted to take that test.
- Assignments are due on the date specified by the instructor. Late assignments will receive a grade penalty.

## General Course Objectives:

### Medical Terminology

1. Define the “root”, “base”, and “stem” components of medical terms.
2. Identify several root elements as they appear in medical terminology.
3. Differentiate between a stem and a base.
4. Define "Prefix" and "Suffix" and identify their location in scientific terms.

5. Define "Combining Vowel" and identify those most commonly used.
6. Define "Combining Form" and analyze the combining forms of scientific terms and identify their component parts.
7. Define the following terms:
  - a) Loan Word
  - b) Hybrid Word
  - c) Eponym
  - d) Transliteration
8. Identify the meanings of various Latin and Greek prefixes and suffixes.
9. Compose English derivation from Greek and Latin vocabulary words.
10. Describe "Etymological Word Analysis".

### **Etymological Word Analysis**

11. Distinguish by means of slash marks (/) the various components of selected scientific medical terms and identify which of the components are: Prefixes, Base Elements, Connecting Vowels, or Suffixes.
12. State the meaning of the components of selected medical terms.
13. Compose the literal translation of the components of selected medical terms into a lucid statement of their meanings.
14. Etymologically analyze the designated terms for selected medical reports and restate the medical reports in nonscientific terms.

### **Federal and State Regulatory Agencies**

15. Define the following terms:
  - a) Accreditation
  - b) Credentials
  - c) Certification
  - d) Licensure
  - e) Registration
16. Describe how the Standards of an Accredited Educational Program for the radiographer relate to the educational program.
17. Explain the difference between the accreditation and credentialing process and identify agencies involved with each process.

### **Professional Organizations**

18. Describe the purposes, functions and activities of professional organizations.
19. Identify international, national, state and district organizations for the radiographer.

### **Medical-Legal Aspects of Clinical Practice**

20. Discuss the "Patient's Bill of Rights."
21. Discuss institutional and professional liability protection available to the radiographer.
22. Define "Confidentiality".
23. Explain the rationale for confidentiality of personal information according to HIPAA.
24. Define "Negligence."
25. Differentiate between gross negligence and contributory negligence.
26. Define "Malpractice."
27. Discuss negligence and malpractice as they apply in the clinical setting.
28. Describe the elements necessary for a valid malpractice case.
29. Define "Informed Consent."

30. Discuss elements necessary, legal theories, and standards for disclosure relating to informed consent.
31. Given radiographic procedures, describe how consent forms are utilized.
32. Define "Intentional Misconduct."
33. Discuss various types of misconduct that can occur in the clinical setting (e.g., incorrect patient identification/verification, battery, assault, invasion of privacy, slander, libel, and false imprisonment).
34. Discuss legal implications regarding the manipulation of electronic data (e.g. exposure indicator, processing algorithm, window and level, cropping or masking off anatomy).
35. Discuss the Doctrines of Borrowed Servant, Res Ipsa Loquitur and Respondent Superior.
36. Discuss the American Society of Radiologic Technologists Practice Standards for the radiographer and describe the elements that comprise it, including limits of responsibility.
37. Identify legal and professional standards and describe how each relates to the radiography practice.
38. Discuss patient rights as they may apply to research participation.

### **Ethics**

39. Discuss the ARRT Standards of Ethics for Radiographers.
40. Discuss ARRT Code of Ethics and identify the ARRT Rules of Ethics.
41. Differentiate between moral and professional ethics.
42. Describe the ethical principles of autonomy, beneficence, confidentiality, double effect, fidelity, justice, nonmaleficence, paternalism, sanctity of life, veracity, and respect for property.
43. Discuss how the Standards of Ethics relate to professional ethical values and standards.
44. Given the Patients' Bill of Rights (AHA Patients' Rights Statement), discuss how its provisions relate to patient ethical values and standards.
45. Identify ethical issues in Healthcare. Describe the patient right to die including "no code" orders, "DNR" orders, living wills, and power of attorney for health care.
46. Given simulated situations, solve problems in terms of accepted professional standards.

### **Patient Records**

47. Describe ethical and legal impacts on hospital and departmental medical recording of patient information.
48. Discuss ownership and availability of patient information.
49. Given simulated situations, respond to various patient information inquiries.
50. Discuss the importance of documenting patient and examination information, accurately and legibly.
51. Discuss aspects of confidentiality as they relate to the patients and their personal information, professional, institution and release of information.
52. Discuss the location of the portions of a chart containing information relevant to diagnosis, history, current status, laboratory reports, radiology reports, allergies and medications.

### **Communication and Patient Education**

53. Discuss the Health- Illness Continuum.
54. Identify Maslow's Hierarchy of Needs.
55. Discuss cultural diversity in patient care and communication.

56. Identify expectations the patient may have concerning health care professionals.
57. Differentiate between self-concept and self-esteem.
58. Identify various methods of therapeutic communication and discuss how each can be utilized in patient education.
59. Identify blocks to therapeutic communication and discuss how each can be overcome.
60. Define various terms relating to communication and patient education.
61. Demonstrate approaches to dealing with patients with various communication challenges to include language barriers, cultural factors, social factors, physical impairments, sensory impairments, age, emotional status and acceptance of condition.
62. Demonstrate the ability to relay information to other health professionals and the patient's family.
63. Establish a plan for patient teaching and discuss how to answer patient questions regarding the procedure, radiation dose, and inquiring about other imaging modalities.
64. Use the acronym AIDET to insure proper steps of patient communication.
65. List the (5) phases of the grieving process as defined by Dr. Elisabeth Kübler-Ross and identify characteristics of each phase.
66. Discuss ethical, emotional, and physical aspects of end-of-life related issues.

### **Body Mechanics, Patient Transfer, and Positioning**

67. Describe and demonstrate principles of proper body mechanics.
  68. Discuss techniques for patient transfer to include:
    - a) assist patient from wheelchair to table/table to wheelchair
    - b) assist patient from stretcher to table/table to stretcher
    - c) three-man lift/transfer
    - d) draw sheet transfer
    - e) slide board (smoother-mover) transfer
  69. Discuss the proper use of safety straps, side rails, restraints, compression bands and other immobilization devices.
  70. Discuss procedures for turning the patient with the following conditions:
    - a) severe trauma
    - b) spinal cord trauma
    - c) unconscious
    - d) disoriented
    - e) amputee
  71. Discuss precautions taken to protect the patient's skin while moving and positioning patients.
  72. Discuss assisting patients with medical equipment to include: infusion catheters and pumps, oxygen delivery systems, NE tubes, NG tubes, urinary catheters, chest tubes, and tracheostomy tubes.
- ### **Patient Care and Assessment**
73. Discuss the prevention of patient and personal injury to include fire safety and the prevention of falls.
  74. Discuss the aspects of patient comfort and the importance of each to the care and safety of the patient.
  75. Given specific patient considerations and conditions, discuss the various aspects of general patient care.

76. Discuss procedures for assuring security of the property of inpatients and outpatients.
77. Describe the procedure for assisting the patient to dress and undress.
78. Discuss the procedure for assisting the patient with a bedpan or urinal.
79. Describe proper care for patients with a newly applied cast
80. Discuss proper skin care during radiographic procedures.
81. Demonstrate how to take a history appropriate to a specific procedure.
82. Explain the correct method of transporting a patient who has a retention catheter in place.
83. Explain the reasons for nasogastric tube and nasoenteric intubation and the technologist's responsibilities when these tubes are in place.
84. Describe the precautions needed when caring for a patient who has a gastrostomy, a central venous catheter, a tracheostomy, mechanical ventilation, or who needs suctioning.

### **Infection Control**

85. Define "infectious pathogens," "communicable disease," and "nosocomial infection."
86. List and describe the factors involved in the spread of disease (cycle of infection).
87. List and describe the main routes of infection transmission.
88. Discuss the recommendations for isolation precautions in hospitals as set forth by the Center for Disease Control (CDC).
89. Describe Standard Precautions.
90. Define and state examples of the following terms:
  - a) asepsis (practical, medical and surgical)
  - b) antiseptics
  - c) disinfection
  - d) sterilization
91. Describe various methods of sterilization.
92. Discuss and demonstrate the following procedures:
  - a) medically aseptic hand hygiene
  - b) safe handling of contaminated equipment/surfaces
  - c) handling of soiled linens
  - d) disposal of contaminated materials
  - e) maintaining sterile fields
  - f) the use of personal protective equipment (e.g. gloves, gowns, masks)
  - g) handling sterile instruments
93. Discuss the utilization of Transmission-Based Precautions to include the following:
  - a) Airborne
  - b) Droplet
  - c) Contact
  - d) Combination Airborne & Droplet
  - e) Neutropenic (reverse)
  - f) Healthcare associated (nosocomial) infections
94. Discuss various infections requiring precautions and describe what transmission-based precaution would be necessary to prevent the transmission of disease to include, but not limited to:
  - a) VRE

- b) MRSA
- c) Measles/Mumps/Rubella
- d) Varicella (Chicken Pox)
- e) Tuberculosis
- f) Meningitis
- g) Pneumonia
- h) Influenza
- i) Herpes Zoster
- j) Viral/Hemorrhagic Conjunctivitis
- k) Impetigo
- l) Enteric infections
- m) Wound infections
- n) Herpes Simplex Virus
- o) Non-contained abscesses, cellulitis and decubitus ulcers

**Vital Signs:**

- 95. Define various terms relating to vital signs and patient assessment.
- 96. Describe vital signs used to assess patient condition.
- 97. Explain the physiological principles related to temperature, pulse, respiration and blood pressure.
- 98. Identify normal values for clinical measurement of temperature (various locations), pulse, respiration and blood pressure.
- 99. Discuss the use and maintenance of equipment used for measuring vital signs.
- 100. Explain and discuss the measurement and recording of vital signs.
- 101. Discuss the use of oxygen equipment.
- 102. Discuss the use of an electrocardiogram.
- 103. Recognize a normal electrocardiograph (ECG) pattern, and the medical implications of one that is not normal.
- 104. Discuss pain scale.

**Pediatric Imaging:**

- 105. Define the pediatric patient.
- 106. Discuss professional, appropriate, and age-specific communication techniques.
- 107. Describe safe immobilization methods.
- 108. Describe radiation protection method used to pediatric imaging.
- 109. Discuss your role as the radiographer in a suspected child abuse case.

**Geriatric Imaging:**

- 110. Describe the special considerations while imaging geriatric patients and describe their special care needs.
- 111. Discuss the normal body changes associated with aging.
- 112. Discuss cultural considerations when caring for the geriatric patients
- 113. Discuss the radiographer's role in a suspected elder abuse procedure.

**Medication Administration:**

- 114. Discuss the use of the metric system for measuring medication.
- 115. Identify various syringes sizes.
- 116. Identify various size and gauge needles.
- 117. Demonstrate proper procedure for filling syringes.



118. List (5) routes of medication administration.
119. Describe the administration of parenteral fluids in terms of preparations, description/purpose and considerations.
120. State appropriate IV bag height above the level of the vein and average rate of flow(drop/min) for IV fluids.
121. Discuss the radiographer's role in medication administration.
122. List the common medial abbreviations used in medication administration.
123. Describe the role of the radiographer in the preparation for venipuncture.
124. Discuss the care of patients with an IV and how to discontinue an IV.
125. Discuss possible complications to medical administration.
126. Describe the response of the radiographer to complications/reactions to medication administration.

**Pharmacology\*:**

127. Recognize various categories of drugs.
128. Recognize common drug nomenclature and basic concepts of pharmacology.
129. Discuss specific drugs in each category and identify each drug's expected actions, reactions and possible interactions.
130. Discuss specific drugs for CPR procedures.
131. Discuss drugs used for premedication, including recognition of initial peak response.
132. Identify contraindications to common medications.
133. Identify biological factors affecting the action of drugs.
134. Define various terminologies related to pharmacology.
135. Describe the contents of an Emergency Kit.
136. Discuss the important of a patient history prior to medication administration.

\*Source: ASRT Curriculum Guide for Radiologic Technologists

**Acute Situations:**

137. Define various terms relating to acute situations.
138. Assess the basic levels of neurologic and cognitive functioning.
139. Discuss seizure disorders, including safety precautions and observations to be recorded.
140. Discuss CPR and state the code routine used by affiliated clinical sites.
141. Demonstrate the abdominal thrust, Heimlich maneuver.
142. List (4) levels of consciousness.
143. Describe the signs of physical and psychological shock.
144. Differentiate between hypoglycemia, ketoacidosis, and hyperosmolar nonketotic syndrome.
145. List the clinical manifestations of a pulmonary embolus.
146. List the clinical manifestations of cerebral vascular accident.
147. Describe the procedure for dealing with the agitated or confused patient, the patient in pain, and the intoxicated patient.
148. Discuss the actions taken by the radiographer in response to various acute situations.

**Preparations, Scheduling, and Sequencing**

149. Explain the purpose of contrast media used in radiographic examinations.

150. List two steps to be taken to ensure the accuracy of patient identification.
151. Identify bowel preparations for various studies and discuss their purpose.
152. Determine proper scheduling and sequencing of multiple diagnostic procedures that may be ordered at one time by the referring physician.
153. Discuss reasons for discontinuing an examination or preparation of a patient having contrast media studies.
154. List three types of patients who should be examined as early in the day as possible.

**Trauma and Mobile Radiography:**

155. Identify the general guidelines when caring for a patient who has traumatic injuries
156. Discuss the radiographer's response to patients with a head injury, a facial injury, or a spinal cord injury.
157. List situations in which mobile radiography may be preferable to an examination in the radiology department.
158. Define various terms relating to patient care and patient conditions during mobile radiography.
159. Identify various special care units.
160. List common tubes and lines demonstrated with mobile chest radiographic images.
161. List precautions to be taken when doing a mobile examination on patient with various conditions (i.e., tracheostomies, mechanical ventilation, nasogastric tube, closed chest drainage, specialty catheters, pacemakers, etc.).
162. List precautions to be taken when doing a mobile examination on patients of various ages (i.e. neo-natal, pediatric, and geriatric).
163. List important factors to be noted during an initial survey before radiography in special care units.

**Surgical Aseptic Technique:**

164. Differentiate between surgical and medical asepsis
165. Explain the radiographer's responsibility for maintaining surgical aseptic technique when it is required.
166. Demonstrate the correct method for opening up a sterile pack.
167. Demonstrate the correct method of placing a sterile object on a sterile field.
168. Demonstrate the correct method of donning a sterile gown and sterile gloves.
169. Identify members of the surgical team.
170. Identify methods of sterilization.
171. Discuss basic rules for surgical asepsis.
172. Identify proper skin prep and draping for a sterile procedure.
173. Identify the sterile corridor.

**Developing Critical Thinking Skills:**

174. Define and explain critical thinking.
175. Discuss the modes of thinking.
176. Discuss the importance of developing critical thinking skills in the profession of radiography.
177. Participate in various exercises to develop critical thinking skills.
178. Discuss the problem-solving process before beginning an x-ray examination.

<b><u>Agenda</u></b> Week #1	<ul style="list-style-type: none"> <li>• Review of agenda and module</li> <li>• Federal and State Regulatory Agencies</li> <li>• Professional Organizations</li> </ul>
Week #2	<ul style="list-style-type: none"> <li>• Professional Issues</li> <li>• Medical Terminology Lesson #1</li> <li>• The Basics of Medical Terminology</li> <li>• Etymological Word Analysis</li> </ul>
Week #3	<ul style="list-style-type: none"> <li>• Patient Assessment and Communication</li> <li>• Patient Care and Safety</li> <li>• Body Mechanics and Patient Transfer Techniques</li> </ul>
Week #4	<ul style="list-style-type: none"> <li>• Infection Control</li> <li>• Medical Terminology Lesson #2</li> <li>• Medical Terminology Lesson #3</li> </ul>
Week #5	<ul style="list-style-type: none"> <li>• Medical Ethics for the Radiographer</li> <li>• Vital Signs and Oxygen Administration</li> </ul>
Week #6	<ul style="list-style-type: none"> <li>• Pediatric Imaging Considerations</li> <li>• Geriatric Imaging Considerations</li> </ul>
Week #7	<ul style="list-style-type: none"> <li>• Mid-term Examination</li> <li>• Professional Behaviors</li> <li>• Case studies</li> </ul>
Week #8	<ul style="list-style-type: none"> <li>• Trauma and Mobile Imaging</li> <li>• Medical Terminology Lesson #4</li> <li>• Medical Terminology Lesson #5</li> <li>• Medical Emergencies</li> </ul>
Week #9	<ul style="list-style-type: none"> <li>• Medical Terminology Lesson #6</li> <li>• Urologic Procedures</li> <li>• Gastrointestinal Procedures</li> <li>• Additional Medical Procedures</li> </ul>
Week #10	<ul style="list-style-type: none"> <li>• The Doctor- DVD</li> </ul>
Week #11	<ul style="list-style-type: none"> <li>• Aseptic Technique</li> <li>• Pharmacology</li> <li>• Medical Terminology Lesson #7</li> </ul>
Week #12	<ul style="list-style-type: none"> <li>• Pharmacology</li> <li>• Basic Electrocardiogram monitoring</li> </ul>
Week #13	<ul style="list-style-type: none"> <li>• Drug Administration and Venipuncture</li> <li>• Medical Terminology Lesson #8</li> <li>• Medical Terminology Lesson #9</li> </ul>
Week #14	<ul style="list-style-type: none"> <li>• Medical Terminology Lesson #10</li> <li>• Advanced Imaging Modalities</li> <li>• Communication Assignment and Discussion</li> </ul>
Week #15	<ul style="list-style-type: none"> <li>• Final Examination</li> </ul>

