

**NEW YORK CITY COLLEGE OF TECHNOLOGY
THE CITY UNIVERSITY OF NEW YORK**

Department of Radiologic Technology & Medical Imaging

**Introduction to Radiologic Technology & Medical Imaging
Course Outline / Learning Outcomes**

**Fall, 2023
RAD 1124 Section OL10
TUESDAY 8:30am to 9:20am
ONLINE Synchronous**

NOTE: This Syllabus is subject to change at any time

Dr. Jennett M. Ingrassia, Ed.D., R.T.(R)

Room A-414

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Office hours: To Be Announced

Course Delivery: Online [Synchronously](#) via Zoom & Blackboard

Note: All other course related documents can be found on Blackboard.

Updated 8/24/23

New York City College of Technology/CUNY
Department of Radiologic Technology & Medical Imaging
Fall 2023

COURSE: RAD 1124 - Introduction to Radiologic Technology & Medical Imaging (1cl. hr., 1 cr.)

INSTRUCTOR: Dr. Jennett M. Ingrassia, Ed.D., R.T. (R) **OFFICE:** Room A-414

EMAIL: jingrassia@citytech.cuny.edu

PHONE: (718) 260-5360

OFFICE HOURS: To Be Announced

COURSE DESCRIPTION:

This course provides an introduction to the various imaging procedures performed by radiologic technologists. This course may be taken by students who are not eligible for other RAD courses.

PREREQUISITES: CUNY certification in reading

COURSE OBJECTIVES:

Upon completion of RAD 1124, students will be able to:

1. Define basic medical terminology
2. Discuss the field of radiologic technology
3. Provide a historical perspective on the evolution of technology in radiologic technology
4. Articulate the various imaging techniques employed in the field
5. Discuss the requirements for success in the educational program
6. Reflect and evaluate a career in radiologic technology

REQUIRED TEXTBOOK:

Callaway, Introduction to Radiologic Technology – 8th Edition, Mosby, St. Louis, 2020.

DISTANCE LEARNING EXPECTATIONS:

This ONLINE course will rely predominantly on use of Zoom and use Blackboard. The Zoom platform does not require software and is web based. If you are unfamiliar with Zoom you may review help/tutorial material for Zoom by following the link below at: <https://support.zoom.us/hc/en-us/articles/206618765-Zoom-Video-Tutorials>

For this course, students are required to read the related chapters in the textbook, **prior to class**. The lecture material will be presented on Zoom each Tuesday **starting at 8:30am to 9:20am**. Students are expected to fully participate during class sessions and complete all assignments by the established deadlines. Students are also responsible for their own learning and must discipline themselves accordingly. **Each week, the sign-in information for Zoom will be in the Announcement section of Blackboard.**

CLASSROOM CONDUCT

- ✓ This class meets for only 50 minutes on Zoom, each week. It is imperative for students to arrive early in order to make full use of our time in class. I will be on Zoom about 5 minutes before we start. Do your best to be there before we start. Lateness will adversely affect your course grade in the Active Participation category. After joining the class on Zoom, you have to remain for the entire session, especially during testing.



CLASSROOM CONDUCT (Continued):

- ✓ When on Zoom, you must **sign in using your first and last name** for attendance recording. Please note that this class will not be recorded.
- ✓ **CELL PHONE POLICY:**
In order to maintain an environment conducive to learning, the use of cell phones, during lecture and discussions is prohibited. The only exception is for students who have no choice but to use their cell phones to sign in on Zoom.
- ✓ Radiographers are expected to actively interact closely with patients and other members of the medical imaging team. You are therefore required **to join the Zoom Classroom with your camera on** or use an appropriate profile image with your full name displayed for attendance recording. Feel free to use a virtual background in order to maintain privacy of your home environment. If you are ill and would like to follow class without video, please inform me prior to class.
- ✓ The slides will be posted each **Tuesday afternoon** after class.

INSTRUCTOR'S OFFICE HOUR:

I will be available to meet with you virtually by appointment only. Office hours to be announced. Please be sure to schedule an appointment ahead of time with the secretary. You may email him radiologictech@citytech.cuny.edu. Send an email to his address requesting an appointment. **You will need to let him know that you are specifically in Dr. Ingrassia's RAD 1124 class and the reason for the appointment.**

COURSE GRADING

1. Course Active Participation (Includes Discussion Board participation)	15%
2. Average of quizzes	20%
3. Cumulative Midterm Exam	20%
4. Cumulative Final Exam	<u>45%</u>

Total 100%

GENERAL TESTING POLICY

Cheating on examinations/assignments or an act of collusion are grounds for dismissal from the program and will not be tolerated. Please be reminded that all types of testing are individual work. Unless the testing is performed as a group, you are not permitted to discuss any part of any form of testing to include exams, quizzes, assignments with anyone—not with your classmates, your professors, your tutors, your friends, or your relatives. If the instructor suspects any collaboration between students and others, she is entitled to meet with you individually to ascertain and verify that your submitted answers are truly your own, and that no one assisted you in completing your exam and that any form of academic dishonesty took place. Failure to adhere to these rules will result in an irrevocable grade of zero.

Note: No form of academic dishonesty will be tolerated in this course and in the program. If a student appears, at the instructor's discretion, to be in violation of the academic integrity policy during an exam or quiz, he or she will minimally and immediately receive a grade of zero. Note that upon additional review, further action may be taken including dismissal from the program.

EXPLANATION OF GRADING

1. Class Participation:

Students are expected to participate in all classes and class activities through discussion, inquiry and individual or group activities, including the Discussion Board.

2. Quizzes:

IMPORTANT NOTE: Your video must be on during all quizzes and exams. Please plan for this now and make sure that when the time comes, you're all set to simultaneously be on Blackboard and Zoom.

There will be a minimum of three quizzes given during the semester. Quizzes will reflect material taught in previous classes and will be given at the beginning of each class as listed in the outline in this syllabus. The format is as follows: Class begins at 8:30am and the quiz will be made available to students exactly 5 minutes later at 8:35am. The quizzes are 20 questions in length and students will be given exactly 20 minutes to take the exam, in this case until 8:55am. **The quiz will automatically shut down at 8:55am. Please note, students will not be able to return to a question once the answer is submitted. Therefore, you must answer each question very carefully. Students who do not begin the quiz on time will not be given the full 20 minutes to take the exam and only have the remaining time to complete it as the quiz will automatically shut down at 8:55am. Students will only have the remaining time to complete the quiz. As a result, PLEASE PLAN TO BEGIN THE QUIZ ON TIME.**

3. Discussion Board Questions:

As per the Course Syllabus (Outline section) Discussion Board questions will be posted as an assignment and will count as part of your Course Participation grade. **Due dates will be strictly observed.** Failure to post an assignment will result in a grade reduction. **Follow the course outline in this syllabus and note all due dates so that you can properly plan ahead. All due dates are final. There are no exceptions to this rule.**

4. Midterm and Final Exams:

Both the midterm and final examinations will be cumulative. The format will be the similar to the *Quizzes* section, noted above. However, the Midterm exam will be comprised of 40 questions and the Final exam, 50 questions. Students will be given 50 minutes for both the Midterm and the Final Exams. As with quizzes, **students who do not begin the Midterm or Final Exams on time will not be given the full 50 minutes to take the exam as it will still automatically shut down after 50 minutes. Students will only have the remaining time to complete the exams. As a result, PLEASE PLAN TO BEGIN THE EXAMS ON TIME.**

MAKE UP POLICY FOR MISSED QUIZZES, MIDTERM OR FINAL EXAM

Missed quizzes and exams are strongly discouraged. Unless the absence is formally excused by the Center for Student Accessibility, any make up exam will result in an automatic deduction of 10 points. If a student is absent from class on the day of a quiz, midterm or final exam, it is his or her responsibility to contact the instructor **within 48 hours** to arrange for a make-up quiz or exam. **Failure to do so will result in a grade of zero.** The quiz or exam must be made up within one week of the original test date. It is the **student's responsibility** to contact the instructor to make arrangements for the date and time of the makeup. Failure to contact the instructor within 48 hours of the original test date or failure to be in attendance on the pre-arranged make up test date will result in a grade of zero. **All make up quizzes and exams may be in essay format with college level writing to be a part of the grading requirement.**

INSTRUCTOR-STUDENT COMMUNICATION AND AVAILABILITY: It is important to remember that while the Internet is available 24 hours a day, your instructor and classmates are not. In a regular classroom setting, faculty are generally available to meet with students before or after class, during scheduled office hours, or if an appointment is made.

Note that it may take 24 hours for the instructor to respond to your questions—especially after 5:00 PM, excluding weekends and holidays. For this course you can expect a reasonable response time for your questions to be as follows: All emails that are received prior to 5:00pm Monday through Thursday, will be responded to within 24 hours. Emails received after 12:00pm on Friday through all day Sunday, will be responded to on the following Monday. Students will be informed in advance if there is any change to this schedule. As a result, please do not wait until the last minute to ask an important question—plan ahead!

When using email as a means of communication to the instructor, all students **must** use their CityTech email account. If you do not have one, you must contact the HelpDesk at 718-254-8565. **Personal email accounts are not to be used.** When sending email to the instructor, please do the following: The subject line must have the course number, **RAD 1124 and Section number** in the subject line, followed with the words “Regarding_____” so that the instructor can identify the course being addressed in the email followed by the subject matter. Also be sure to sign your name at the end of the email.

NEW YORK CITY COLLEGE OF TECHNOLOGY POLICY ON ACADEMIC INTEGRITY

Students and all others who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and at New York City College of Technology and is punishable by penalties, including failing grades, suspension, and expulsion. The complete text of the College policy on Academic Integrity may be found in the catalog.

STUDENTS WITH SPECIAL NEEDS:

Qualified students with disabilities, under applicable federal, state, and city laws, seeking reasonable accommodations or academic adjustments must contact The Center for Student Accessibility for information on City Tech’s policy and procedures to obtain such services. Students with questions on eligibility or the need for temporary disability services should also contact the center at: The Center for Student Accessibility, 300 Jay Street, room L-237 718- 260-5143; [HTTP://www.citytech.cuny.edu/accessibility/](http://www.citytech.cuny.edu/accessibility/)

PLEASE SEE THE COURSE SCHEDULE ON NEXT PAGE

RAD 1124 Introduction to Radiologic Technology

Topic, Quiz and Exam Schedule

Fall, 2023

NOTE: This schedule is subject to change at any time.

Tuesday 8:30am to 9:20am

Week	Date	Topic	Reading and Discussion Board (DB) Assignments	Quiz/Exam or DB
1	8-29	<i>Medical Imaging History</i>	For Lecture Read Chapters 2 & 4 DB Assignment #1: Introduction	DB #1 Due 9-4-23 11:59pm
2	9-5	<i>Imaging Equipment & Specialization (Part #1)</i>	For Lecture Read Chapters 13 & 16 DB Assignment #2: Imaging Modalities	
3	9-12	<i>Imaging Equipment & Specialization (Part #2)</i>	For Lecture Read Chapter 16	DB #2 Due 9-18-23 11:59pm
4	9-19	<i>Radiology Department: A Historical Perspective</i>	For Lecture Read: Chapters 9 & 12	
5	9-26	QUIZ #1 Located on Blackboard under the "Quiz/Exam" tab and will be available from 8:35am to 9:05am. NOTE: Week #4's Lecture NOT INCLUDED in this Quiz.		20 Questions Weeks 1, 2 & 3
6	10-3	<i>The Health-Care Delivery System/Hospitals</i> ----- <i>The Hospital Health-Care Team</i>	For Lecture Read Chapters 3 & 7 ----- For Lecture Read Chapter 7	
-----	10/10	Monday Schedule NO CLASS		
7	10-17	<i>From Classroom to Clinical</i> ----- <i>Medical Terminology</i>	For the Lecture Read Chapter 1 DB Assignment #3: Clinical Rotation Responsibility	DB #3 Due 10-23-23 11:59pm
8	10-24	MIDTERM EXAM (Cumulative) Located on Blackboard under the "Quiz/Exam" tab and will be available from 8:30am to 9:20am.		40 Questions COMPREHENSIVE Weeks 1-7
9	10-31	<i>Intro to Radiation Protection & Safety</i>	For the Lecture Read Chapter 10	DB #4 Due 11-6-23
10	11-7	<i>Ethics & Professionalism</i>	For the Lecture Read Chapters 11 & 3 (p. 37-38)	
11	11-14	<i>Intro to Principles of Diagnostic Imaging</i>	For the Lecture Read Chapter 8	
12	11-21	QUIZ #2 Located on Blackboard under the "Quiz/Exam" tab and will be available from 8:35am to 9:05am.		20 Questions Weeks 9-11
13	11-28	<i>Intro to Patient Care</i>	For the Lecture Read Chapters 5 & 6	
14	12-5	<i>Professional Growth</i>	For the Lecture Read Chapters 14 & 15	
15	TBA	Final Exam (Cumulative) Exam is on Blackboard under the "Quiz/Exam" tab.		50 Questions Comprehensive

Week

I. INTRODUCTION TO RADIOLOGIC TECHNOLOGY

- A. Introduction
- B. History of radiologic technology
- C. Radiation in medicine
- D. Opportunities in radiologic technology
 - 1. Imaging
 - 2. Administration
 - 3. Business and Industry
- E. The healthcare team

II. RADIOGRAPHIC IMAGING MODALITIES

- A. Introduction
- B. Diagnostic imaging
 - 1. Radiography
 - 2. Fluoroscopy
- C. CT
- D. MRI
- E. Mammography
- F. Special procedures
- G. Therapeutic procedures
- H. Nuclear procedures
- I. Ultrasound
- J. Biopsy procedures
- K. Introduction to medical terminology
 - 1. Medical abbreviations
- L. PET
- M. Bone densitometry
- N. PACS
- O. Film processing
- P. Digital procedures

III. INTRODUCTION TO RADIATION PROTECTION

- A. Introduction
- B. Radiation units
- C. Sources of human exposure
- D. Biological concepts
- E. Radiation protection standards
- F. Radiation protection procedures
 - 1. Time, distance, shielding
 - 2. Radiation protection devices
 - 3. Personnel monitoring
 - 4. ALARA
- G. Medical terminology
 - 1. Root words
 - 2. Prefixes
 - 3. Suffixes

IV. INTRODUCTION TO RADIOGRAPHIC EXPOSURES

- A. Introduction
- B. Principles of radiographic exposure
 - 1. Definition of x-rays
 - 2. Basic exposure factors
 - a. mA, time, kVp, and SID
 - b. Radiographic quality
 - c. Visual elements
 - d. Geometric elements

- C. Anatomy and physiology
 - 1. Body planes
 - 2. Body systems
 - 3. Radiographic positions
 - 4. Radiographic projections

V. QUIZ #1

VI. INTRODUCTION TO PATIENT CARE

- A. Introduction
- B. Patient assessment
- C. Vital signs
 - 1. Blood pressure
 - 2. Temperature
 - 3. Respiration
 - 4. Pulse
- D. Medication and administration
- E. Documentation
 - 1. X-ray requisition
 - 2. Patient chart
 - 3. Radiographs
- F. Patient education
- G. Medical terminology cont.

VII. MIDTERM

VIII. THE HEALTH-CARE TEAM

- A. Introduction
- B. The health-care team
 - 1. Definition of the health-care team
 - 2. Radiographers role
- C. Professional relationships with the radiographer
 - 1. Physician
 - 2. Nurse
 - 3. Other members of the health-care team
- D. Changes in the health-care team
- E. Medical Terminology

IX. HEALTH CARE ETHICS

- A. Professional Ethics
- B. Systems of law, Ethics and Morals
- C. Ethical Evaluations
 - 1. Moral Issues
 - 2. Ethical Principles
 - 3. Ethical Judgment
- D. Legal Issues in Radiology
- E. Confidential vs. Non-confidential Information
- F. Patient Care and inter-professional Relationships
 - 1. Patient Relationships
 - 2. Physician Relationships
 - 3. Relationships With Other Health Professionals
- G. Radiographer's Code of Ethics
- H. Patient's Bill of Rights
- I. Types of consent
- J. Related Terminology

X. THE HEALTH-CARE DELIVERY SYSTEM/HOSPITALS

- A. Development of health-care
 - 1. Hospital organization
 - 2. Radiology organization
- B. Structure
 - 1. Development
 - 2. Three levels of care
- C. Hospitals
 - 1. Philosophy
 - 2. Mission statement
 - 3. Organization
- D. Other healthcare settings
- E. Management functions
 - 1. TQM
 - 2. QA/QC
- F. Regulating agencies and committees
 - 1. External
 - 2. Internal
- G. Medical terminology cont.

XI. QUIZ #2

XII. RADIOLOGY DEPARTMENT/ENVIRONMENT

- A. Introduction
- B. Organization and management
- C. Personnel positions
- D. Related workflow

XII. RADIOLOGY DEPARTMENT/ENVIRONMENT (continued)

- E. Radiology services
 - 1. Hospital
 - a. Inpatient
 - b. Outpatient
 - 2. Private office
 - 3. Imaging centers
- F. Radiology in today's health-care system
- G. Medical terminology cont.

INTRODUCTION TO CLINICAL EDUCATION

- A. Introduction
- B. Clinical rotations
- C. Resources
 - 1. Physical facilities
 - 2. Program officials
- D. Clinical education policies
 - 1. Hospital & School policies
- E. Progressive clinical development
- F. Methods of clinical evaluation

XIII. RADIOGRAPHER'S PROFESSIONAL ROLE

- A. Introduction
- B. Environment
- C. JRCERT (Complaint Procedure & Form)
- D. Certification of individuals
 - 1. Certification
 - 2. ARRT

- a. Radiography
 - b. Advanced categories
- 3. State license
- E. Professional societies
- F. Work Related stress
- G. Radiography practice standards
- H. ARRT continuing education
- I. Medical terminology cont.

XIV. TBA

XV. FINAL EXAM

RAD 1124 Learning Outcomes

Week 1

Condition: Lecture, discussion and assigned reading which introduces students to the profession of radiologic technology.

Learning Outcomes: At the end of the lecture, the student will be able to:

1. Explain the use of radiation in medicine and describe the discovery of x-rays.
2. Define terms related to radiologic technology.
3. Differentiate the many career opportunities and various specialties in radiography.
4. Describe the roles of other members of the healthcare team.
5. Describe the typical responsibilities of the members of the radiology team.

Week 2

Condition: Lecture discussion and assigned reading on the various types of imaging modalities in the Radiology profession.

Learning Outcomes: At the end of the lecture, the student will be able to:

1. Identify the various types of imaging modalities in medicine.
2. Differentiate between diagnostic and therapeutic procedures.
3. Define fluoroscopic imaging.
4. Discuss the role of radiology in biopsy procedures.
5. Define specific assigned Medical Terminology
6. Differentiate between the various imaging procedures available.
7. Indicate when a specific imaging modality is required.
8. Define what is meant by digital procedures.
9. Describe the role of computers in radiologic imaging.
10. Discuss the role of computers in image archiving and reporting systems.
11. Define specific assigned Medical Terminology

Week 3

Condition: Lecture, discussion, assigned reading and homework on the basic principles of radiation protection.

Learning Outcomes: At the end of the lecture, the student will be able to:

1. List the basic units of measure of radiation.
2. List the types of radiation exposure to man.
3. Describe the biological basis of radiation exposure
4. Define ALARA.
5. Describe techniques of radiation safety.
6. Define specific assigned Medical Terminology

Week 4

Condition: Lecture, discussion, homework and assigned reading on the basic principles involved in the production of a radiograph.

Learning Outcomes: At the end of the lecture, the student will be able to:

1. Describe how x-rays are produced.
2. Identify the four basic exposure (technical) factors: mA, kVp, time and SID.
3. Define recorded detail and image quality.
4. Describe the elements of density and contrast.
5. Identify basic anatomy on radiographic images.
6. List the body planes.
7. Define x-ray projection and position.

Week 5 Quiz #1

Week 6

Condition: Lecture, discussion, assigned reading and homework on the basic practice of correct patient care skills in radiology.

Learning Outcomes: At the end of the lecture, the student will be able to:

1. Discuss basic patient assessment techniques.
2. Describe the normal range of patient vital signs.
3. List the principles of medication administration.
4. Define the fundamentals of documentation techniques.
5. Discuss patient education methods.
6. Define specific assigned Medical Terminology

Week 7 Midterm Exam

Week 8

Condition: Lecture, discussion, assigned reading and homework on the hospital health-care team.

Learning Outcomes: At the end of the lecture, the student will be able to:

1. Discuss the components of the hospital health-care team.
2. Define the role of the radiographer in health-care.
3. Identify the relationships of various health-care workers to radiographers.
4. Discuss the role of physician's in radiology.
5. Identify recent changes in the health-care team.
6. Define specific assigned Medical Terminology

Week 9

Condition: Lecture, discussion, assigned reading and homework on the ethical, moral and legal issues involved in the radiology profession.

Learning Outcomes: At the end of the lecture, the student will be able to:

1. Differentiate between the systems of ethics, law and morals.
2. Describe the Radiographer's Code of Ethics
3. Recognize values associated with ethical decision-making in the practice of radiologic technology.
4. List the key components of patient medical records.
5. Differentiate between confidential and non-confidential information.
6. Discuss how standard of care is established for radiologic technologists.
7. Define specific assigned Medical Terminology.

Week 10

Condition: Lecture, discussion, assigned reading and homework on the health-care delivery system and the hospital environment.

Learning Outcomes: At the end of the lecture, the student will be able to:

1. Discuss the structure of the health-care system.
2. Identify the three levels of care.
3. Discuss the philosophy of a hospital organization.

4. Define the principles of a mission statement in a hospital.
5. List basic management principles.

Week 10 (continued)

6. Define TQM and QA/QC.
7. Differentiate between internal and external regulating agencies.
8. Define specific assigned Medical Terminology

Week 11 **Quiz #2**

Week 12

Condition: Lecture, discussion, assigned reading and homework on the evolution of radiology within the hospital setting.

Learning Outcomes: At the end of the lecture, the student will be able to:

1. Describe the changes to the radiology department since the 1960's.
2. Identify and discuss the organizational structure of a radiology department.
3. Describe the role of a radiology administrator.
4. Explain how radiology is thought of as a business.
5. Identify high volume areas within a radiology department.
6. Define specific assigned Medical Terminology

Condition: Lecture, discussion, assigned reading and homework on the clinical education component.

Learning Outcomes: At the end of the lecture, the student will be able to:

1. Define terms that relate to the clinical education of the radiologic technologist.
2. Describe the physical and human resources necessary for effective clinical education.
3. List and explain hospital and school clinical policies.
4. Discuss the importance of adhering to clinical education policies.
5. Summarize the clinical education process.
6. Describe the methods in which the student is evaluated in the clinical setting.
7. Define specific assigned Medical Terminology

Week 13

Condition: Lecture, discussion, assigned reading and homework on the professional role of the radiographer in health-care.

Learning Outcomes: At the end of the lecture, the student will be able to:

1. Define the term professionalism.
2. Discuss how radiographers present themselves to other health-care professionals and the public.
3. Discuss the role of the radiographer in health-care today.
4. Describe the role of the JRCERT and discuss complaint form and procedure.
5. List professional societies for radiographers and their purpose.
6. Discuss ways in which a healthcare worker may reduce stress.
7. Discuss the Radiography Practice Standards.
8. Discuss continuing education for radiographers.
9. Define specific assigned Medical Terminology

Week 14 **TBA**

Week 15 **Final Exam**