MONTGOMERY COLLEGE
Takoma Park Campus
Radiologic Technology

RADIOLOGIC TECHNOLOGY
SYLLABUS
Fall 2018

Course Title: Radiologic Technology III **Course Number:** RADT 206

Time/Place: Tuesday 8:30 am -10:10pm **Section:** 21346
HSC, Room 423/430

Instructor: Rose Aehle, MS RT(R,M) **Ofc. Hours:**
HC, Room 442 Tues: 10:30 am-11:30 am
(240) 567-5564
rose.aehle@montgomerycollege.edu
Lectures will be recorded using Collaborate

Prerequisite: RADT 102 Radiologic Technology II and admission to RT program or permission of the department

Credits: **2** **Prepared:** Fall 2018

TEXTBOOKS REQUIRED: Radiologic Science for Technologists, 11th Edition Bushong.
Textbook of Radiographic Positioning and Related Anatomy, 9th Edition. John Lampignano
Pathology reference to be provided.

REFERENCE TEXTBOOK Radiation Protection in Medical Radiography, 7th Edition Sherer, Visconti and Ritenour

COURSE DESCRIPTION:

(TP/SS only)

Introduction to radiobiology and pathology. The effect of radiation on human biology, the history of human and experimental exposures to radiation and the calculations of effects of radiation are presented. Review of Radiation Safety Practices are reviewed as part of the objectives in radiobiology. Radiation therapy as it relates to radiobiology is introduced. Quality assurance and quality control are reviewed. Identification of pathologies impacting the body systems and commonly diagnosed via routine radiography are discussed. Students participate in completing simulated Mock registries exam. **PREREQUISITE(S):*RADT 102*** *or consent of program coordinator*. **COREQUISITE(S): *RADT 211*** *and* ***RADT 224***. *Two hours each week. Formerly RT 206.*
Mock registry exams will be given once a month.
A more comprehensive presentation of digital radiography and PACS will be incorporated into this class to assure the most up to date information on this subject.

COURSE OBJECTIVES:

At the completion of this course, the student

1. Explain theory of cellular biology as it relates to the principles of radiobiology and radiation therapy.
2. Discuss the causes and effects of short- and long-term exposure to radiation.
3. Recognize the importance of radiation protection in terms of radiation biology and federal standards
4. Recognize the importance of quality assurance and identify its various components.
5. Identify and describe pathologies of the body systems that can be demonstrated via routine and contrast enhanced radiography
6. Demonstrate mastery of test-taking skills by utilizing the monthly mock registry exams.

COURSE METHODOLOGIES:

The course material will be presented in a collaborative lecture/ learning facilitated format. Visuals, computed images and radiographs will be utilized. Presentations to the class to support learning objectives are incorporated into the critical thinking component of the class. Guest lecturers may present some areas of specialty.

Important Student Information Link

In addition to course requirements and objectives that are in this syllabus, Montgomery College has information on its web site (see link below) to assist you in having a successful experience both inside and outside of the classroom. It is important that you read and understand this information. The ***link below provides*** *information and other resources to areas that pertain to the following: student behavior (student code of conduct), student e-mail, the tobacco free policy, withdraw and refund dates, disability support services, veteran services, how to access information on delayed openings and closings, how to register for the Montgomery College alert System, and finally, how closings and delays can impact your classes. If you have any questions please bring them to your professor. As rules and regulations change they will be updated and you will be able to access them through the link. If any student would like a written copy of these policies and procedures, the professor would be happy to provide them. By registering for this class and staying in this class, you are indicating that you acknowledge and accept these policies.*

http://cms.montgomerycollege.edu/mcsyllabus/

Please refer also to the Radiology Technology Student Handbook and Clinical Education Plan for general college policies.

Testing policy

To assure testing integrity the following policy is mandated:

1) Number 2 pencils will be provided. Student are not to use their pencils or mechanical pencils
2) Ear buds, ear phones and any other type of personal audio equipment may not be used
3) The instructor reserves the right to assign seating
4) Students must raise their hand if there is a question about the test during the test period. Students are not to come to the instructor.
5) All personal items must be placed on the ground where the student is seated for the exam. Lockers are available for those who wish to use them.
6) Cell phones and lap tops must be placed beside the student on the ground during the test.
    a. Cell phones should be turned off. Lap tops should be turned off. Books must be closed. Notebooks must be closed
7) The instructor reserves the right to remove the exam from the student if the student is exhibiting behavior not conducive to maintaining testing integrity (examples and not limited to: talking to other students during the test, looking at other student's answer key etc.)
8) Program will follow the college's policy on Academic dishonesty.

Source: **Academic Dishonesty** and How It Is Handled" from Montgomery College's Student Code of Conduct. VIII.

Student e-mail

It is recommended that you check his or her account routinely for official communication or as directed by your instructor(s). Some items you may find there are: course announcements, invoices, important admission/registration information, waitlist status. To check your e-mail, please check Blackboard on a daily basis."

For this class, announcements and email communications will be made through Blackboard.

Attendance

(See page 4 of this syllabus for more attendance requirements specific to this course)

Students are expected to attend all class sessions. In cases involving excessive absences from class, the instructor may drop the student from the class. An excessive absence is defined as one more absence than the number of classes per week during a fall or spring semester; the number of absences is prorated for accelerated sessions.

Students are also expected to be on time for class. Excessive lateness will result in a counseling session with the instructor and persistent lateness may result in unsuccessful completion of the course.

Electronic Devices

Use of recording devices and laptops are permitted for lecture and labs. During lecture and labs, cell phones need to be set on silent or vibrate mode. If a student must respond to a cell phone call during class time, they must leave the classroom or lab to do so. Extended absence from the lecture or lab to return a call may be recorded as an unexcused absence and this may impact the student's ability to continue in the lab or lecture that day. Students are urged to use discretion in returning calls during class time. NO CELL PHONES OR LAP TOPS MAY USED DURING AN EXAMINATION. ALL CELL PHONES MUST BE TURNED OFF PRIOR TO THE BEGINNING OF EXAMINATIONS. NO LAP TOPS WILL BE ALLOWED OUT OF THEIR CASES DURING EXAMINATIONS

Radiologic Technology Program Social Media Policy

Students are advised that no information about the clinical site, staff and clinical patients are ever to be posted on personal and other social media accounts. The posts that ARE NEVER TO BE PUBLISHED ON SOCIAL MEDIA ACCOUNTS include but are not limited to are selfies, photos, descriptions of patients, descriptions of patients other medical staff are attending to, tagging yourself, classmates, technologists or patients (even with assumed patient permission), or "checking in" during clinical hours as a student. *In addition, no images of other students or faculty taken during class hours or lab hours should be posted on private or public social medial account or pages.* Any students found in non-compliance to these policies are considered to be in violation of HIPAA as well as program policy and may be dismissed from the program. Students are cautioned about "liking" a public clinical site social media page and posting any comments that are in non-compliance to the policy noted above. Students are cautioned about friending technologists from their clinical sites. Students may never ask to "friend" or follow a patient's social media account. Montgomery College's Radiologic Technology program has a public Facebook page but the program coordinator is the administrator of this page and is the only person authorized to post on this page. If you feel you have an appropriate post for this page you can place this post on the Facebook page and the program coordinator will review it before allowing it to post. Academic support, images and job opportunities as well as shared posts from other approved sites are regularly posted on this page.

Delayed Opening or Closing of the College

Because of inclement weather or utility failure or for other reasons, it may be necessary to delay opening or suspend all operations of the College or an individual campus. Please refer to the general syllabus link on page 5 of this syllabus.

All inquiries from the news media regarding an emergency event should be directed to the College's

Office of Communications.

How Closing and Delays Impact Classes

If a class can meet for 50% or more of its regularly scheduled meeting time OR if the class can meet for 50 minutes or more, it will meet. Montgomery College will always operate on its regular schedule unless otherwise announced. Depending on the nature of the incident, notifications of emergencies and changes to the College's operational status will be communicated through one or more communication methods including the College's website www.montgomerycollege.edu. For the most up-to-date information regarding College openings, closings, or emergencies, all students, faculty, and staff are encouraged to sign up for email and text alerts via Montgomery College ALERT. Registration information is available at www.montgomerycollege.edu/emergency.

HOUSEKEEPING:

All students are responsible for putting equipment away, keeping equipment clean and in order at the end of each class session. Students are expected to report unsafe and/or broken equipment to the instructor. It is not necessary to report that is responsible for breaking the equipment. Drinking or eating in the classroom and laboratory is not allowed at any time.

PRINTING AT MONTGOMERY COLLEGE

Students will now be charged for printing any document at Montgomery College
Please refer to this link for more information:

http://cms.montgomerycollege.edu/edu/department.aspx?id=27707

GRADING:

93 - 100	A	A student receiving a grade
86 - 92	B	below a "C" in this course
78 - 85	C	will not be able to proceed to
Below 78	F	the next semester's RT courses.

Grades will be determined by:

Upon completion of the units of material presented, the student should perform satisfactorily on written examinations consisting of multiple choice questions and short answer/essay questions. Diagrams and identification of equipment may also be used to evaluate the students' knowledge of the subjects covered.

Final grades will be calculated in the following manner:

Unit Exams (3 + TAKE HOME TEST)	45%
Critical thinking: In Class Path Radiobiology/Digital Assignment/BB quiz Homework assignments	13%
Final Exam (comprehensive)	35%
Attendance	5%
Mock Registry Exam	2%

Unit Exams (45%)

A minimum of three examinations will be given to assess student comprehension of presented materials. The dates and objectives covered in examination form are noted in the class schedule in this syllabus. Examinations will include multiple choice questions and may include matching, sequencing, true or false, fill in the blank and/or short essay questions. The point value is indicated on the examination. Multiple choice, true or false, matching questions are worth one point. Grades are calculated based on the number of points earned divided by greatest possible points. For example if the test has a total of 89 points and a student earns 79 possible points (79/89) the student's score would be 88.7% which will be rounded up to an 89%. All examinations are reviewed in class after

graded and open for discussion of content only. %. ***Examinations whose questions are to be answered on a scantron will be graded based on the answers recorded on the scantron only .*** Tests are kept in the student file.

BB Quiz

A single Quiz is posted on Blackboard and will be due by 5 am on the day of the first examination. The quiz serves as a review of biology as well as questions on current content covered up to the first exam. If the Quiz is not completed by the time and date due the grade will be recorded as a zero. There will be no exceptions. The quiz is posted on BB by the first day of class to allow for adequate time for students to take and students must make a 90% on the quiz. Students may take the quiz multiple time until a 90% or higher score is reached. Those students who receive less than a 90% and choose not to retake the quiz will receive a zero as the grade for the quiz. Students must meet with the faculty if they are having challenges meeting the 90% grade. A 90% or higher score will be overridden by faculty and students will be given a 100% for the grade. If students have questions about this process, they need to speak to the faculty. This will be reviewed on the first day of class.

A take home test, which is available on Blackboard, *is assigned to cover and review specific radiation protection objectives that are not covered in class. This is an independent project. Due date is noted on the course outline. The take home test grade is added to the grade received for exam #2 and is calculated based on the total percentage earned for exam #2 and the take home exam. For example if a student earns an 83% on exam number 2 and a 90% on the take home exam, the two percentages would be added:*

83 + 90 = 173 divided by the total possible percentage (200%). 173 divided by 200 = 86.5 or 87%

NO EXAM MAKEUPS will be given without prior permission from instructor

Assignments to include Critical thinking assignments (13%)

Radiobiology/Digital Radiology Assignment

Two assignments, which are attached to this syllabus, are due as noted in the course outline. **The assignments must be submitted through BB with a bibliography. Lack of bibliography will be result in a 10 point reduction to the overall assignment.** The assignment may be done in outline or bullet form. Assignment is due October 2 by 8:00 am.

Please be aware that the plagiarism tool has been activated for these two assignments so do not copy and paste the answers but put them in your own words. If the plagiarism tool indicates to you that it has caught verbiage considered plagiarized after you have submitted your work, you will have one more additional attempt to re-submit. Those students who do not make the necessary changes to assure a non-plagiarized paper will see a significant reduction or zero for the assignment

Homework Assignments (handouts given in class with due dates noted on assignment)

In Class Critical Thinking Assignment
Students will work in groups to complete an assignment covering additional pathologies. Assignment will be reviewed in class. Assignment will serve as a review tool for these specific chapters

Comprehensive Final Examination (35%)

The final examination is given on the date as dictated by the Collegewide final schedule found in each semester's Montgomery College Credit Course Schedule and noted in the class schedule. The examination covers all

material reviewed in the semester. Questions are primarily designed in multiple choice fashion although some other forms of questions may be designed

Attendance (5%)

- The attendance policy for this course is the same as that stated in the Montgomery College Catalog. Unexcused and excessive absences may result in an administrative drop from the course.
- Every absence, lateness to class or lab, leaving early or lack of participation in class will result in a 10

point deduction per infraction.

- Excessive infractions will result in a coaching/counseling process which result in grade deductions or unsuccessful completion of course.
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The student is urged to review the last sentence concerning unexcused absences and administrative drop from the course. If a student cannot make class, it is their responsibility to call the College and relay that message to the faculty.

Mock Registry (MR) Participation. (2%)

Results of the mock registries will be calculated based on the following curved scoring rubric

First MR -	no grade
Second MR	90% = 100% (take home)
Third MR	55% = 100%

If an MR is a take home or group study assignment, the scoring rubric will be adjusted.

*Example. If the results of an MR is a 40% and the expected 100% score is 50%, the calculated grade would be processed as 40/50 = 80%. The student's grade for this MR would be an 80%

The instructor reserves the right to modify the course outline, content, and evaluations as deemed necessary.

Additional program requirement specific to class of 2019: due to the fact the fluoroscopy unit was malfunctioning, the required fluoroscopy competency performance was not completed in the Spring of the 2018 semester. Therefore, all students must be on campus on November 12 at 7:30 am to complete this competency. Students must wear their dosimeters.

MONDAY NOVEMBER 12, 2018 7:30-9:30 AM. HC 430 FLUORO COMPETENCY. MUST WEAR DOSIMETERS TO COMPLETE THIS COMPETENCY

RADT 206 **TENTATIVE CLASS SCHEDULE** **Fall 2018**

Topics:

(1) 8/28 RT 206 syllabus review Grad application 8:30-9:00

Mock Registry 9:00-10:10

(2) 9/4 Bushong Chapter 29, Human Biology

(3) **9/11** Bushong, Chapter 30, Fundemental Principles of Radiobiology
BB quiz-review of biology –due Sept 25 5:00 am

(4) 9/18 Bushong, Chapter 31, Molecular Radiobiology, Chapter Chapter 32 Cellular Radiobiology

(5) 9/25 **Exam Chapters 29-31 BB quiz due 5:00 am**

(6) 10/2 Bushong Chapter 33 Deterministic Effects of Radiation

Radiobiology/Digital assignment due

(7) 10/9 Bushong, Chapter 34 Stochastic Effects of Radiation

(8) 10/16 Bushong, 37 Radiography Fluoroscopy Patient Radiation Dose**, TAKE HOME MOCK REGISTRY Due Nov. 6**

(9) 10/23 **Exam, Chapters 33,34 and 37**

(10) 10/30 Pathology terminology
Skeletal System (Bontragor + provided resource)
Respiratory System (Bontragor + provided resource)
TAKE HOME TEST DUE ON CHAPTERS 38-40 (Bushong)

(11) 11/6 GI System (Bontragor + provided resource)
Review terminology, 2 and 3
Take home MOCK DUE

MONDAY NOVEMBER 12, 2018 7:30-9:30 AM. HC 430 FLUORO COMPETENCY. MUST WEAR DOSIMETERS TO COMPLETE THIS COMPETENCY

(12) 11/13 **Exam Skeletal, Respiratory, GI + terminology**

(13) 11/20 No classes

(14) 11/27 GTU/GW guest speakers
(15) 12/4 Review Day

FINAL EXAM to include take home test chapters 7-11
- Tuesday December 12 8:00-10:00

Instructor reserves the right to modify course schedule as deemed necessary.

RADT 206 Assignment # 1

RADIOBIOLOGY

Available on BB and must be submitted through BB

Due October 2 THROUGH BB

You may use medical dictionaries, pathology books, human resources or other reference books found in the Radiology Department or the College Library.

Radiology has many career branches. One of which is the field of radiation therapy where the use of ionizing radiation is of therapeutic benefit. Answer the following objectives as completely as possible

1. Explain which principles of radiobiology are maximized in treating patients with megavoltage of radiation. (Hint - remember Bergonie and Triboneau)

2. Define the following terms:

1. external-beam radiation therapy
2. internal radiation therapy, more commonly called brachytherapy).
3. Systemic radiation therapy

3)Explain briefly how irradiation therapy is used as a curative treatment .

4) Explain briefly how radiation therapy is used as a palliative treatment.

RADT 206 Assignment # 2
DIGITAL REVIEW
Available on BB and must be submitted through BB
Due October 2 THROUGH BB

You may use medical dictionaries, pathology books, human resources or other reference books found in the Radiology Department or the College Library. Your Carter and Bushong texts are an excellent resource as is handouts that have been given to you on this subject

Radiology has become digital and the ARRT has updated the content specifics to evaluate candidates knowledge in this field. This assignment is to assure that the student has knowledge of the following specific content

1. Define following terms

a. Sampling frequency
b. Edge enhancement
c. Pixel pitch
d. Bit depth
e. DEL (detector element) size
f. DQE
g. equalization
h. Smoothing
i. Electronic masking

2. Sequence the image capture process with **indirect systems** (be sure to address TFT, FET, as well as the radiation conversion material used in the detector)

3. Sequence the image capture process with **direct systems** (be sure to address TFT, FET, DEL as well as the radiation conversion material used in the detector)

4. Field of view (FOV) and matrix size have an independent relationship. Explain why this relationship is classified as such.