RAD 103
Introduction to Computed Tomography
Spring 2015

Course Description
RAD 103 Introduction to Computed Tomography
Lec. 2 Lab. 0 Cr. 2
This course is a study of the technological developments behind computed tomography, an overview of scanner components, terminology, data acquisition, digital imaging, image reconstruction, display and manipulations. Current applications will be explored including patient screening, contract utilization and administration, contrast reactions and treatment, pediatrics, conscious sedation and monitoring, and radiation protection.
Co-requisites: RAD 205, RAD 210, RAD 256

Course Focus
This course provides an introduction to computed tomography equipment, procedures, and radiation protection during procedures.

Text and References


Reference Text:

Course Goals
The following list of course goals will be addressed in the course. These goals are directly related to the performance objectives. (*designates a CRUCIAL goal)

1* examine accessories of C.T. systems (Q7.2, Q7.3)
2* examine basic instrumentation/computer language (2.7, Q3.8)
3. justify importance of spatial resolution
4. realize advantages of computed tomography imaging
5. realize limitations in CT imaging
6. assess layout for C.T. equipment

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7. integrate detector technology
8. appreciate historical values of C.T.
9* define CT physics principles (Q4.3, Q4.4)
10. investigate factors affecting image contrast
11. investigate factors affecting image density
12. list basic principles of image reconstruction
13. list bio effects of radiation
14. recognize acquisition of data
15. state understanding of basic computers
16. understand administration of contrast media
17. understand leveling of C.T. windows
18. understand width as it pertains to C.T. windows
19. appreciate digitization of images
20. describe detector electronics
21. differentiate between types of imaging data
22. differentiate imaging hardware
23. distinguish basic visualization tools
24* distinguish fundamentals of binary digits (Q2.2, Q2.3)
25* explain digital imaging processing (Q1.10, Q3.7)
26* apply critical thinking (Q11.11, Q11.15)
27. discuss generations of C.T. scanners
28* evaluate problems in computed tomography (Q11.5, Q12.5)
29. evaluate radiation dose in computed tomography

**Student Contributions**

Students will complete any assignments and turn them in to the instructor as determined by the instructor.

Classes are designed to employ a variety of teaching techniques. In order to maximize learning, required readings should be done prior to class. If a student is falling behind in clinical performance and/or academic achievement, it is imperative to seek immediate assistance from the instructor.

**Recording Devices / Cell Phones**

Students are not allowed to use recording devices during any lectures, lab, or clinical periods. Moreover, students must have cell phones **TURNED OFF** (not on vibrate) during lectures and lab times. If for any reason a cell phone rings or vibrates during lecture or lab, the student will receive a grade reduction per occurrence after the **first** warning. Students **ARE NOT ALLOWED** to have their cell phone, iPod, or any other electronic device at their clinical rotations. Violation of the rules/requirements listed above **WILL BE REASON FOR DISMISSAL FROM THE RADIOLOGIC SCIENCES PROGRAM.**
Course Evaluation
Grading
Unit exams (6-8) 30%
Quizzes (10-14) 20%
Mid-term 20%
Final Exam 30%
Total 100%

Course Schedule
Location  Distance Learning
Lecture:  Distance Learning

ADA STATEMENT
The Technical College of the Lowcountry provides access, equal opportunity and reasonable accommodation in its services, programs, activities, education and employment for individuals with disabilities. To request disability accommodation, contact the counselor for students with disabilities at (843) 525-8228 during the first ten business days of the academic term.

ATTENDANCE
The College’s statement of policy indicates that students must attend ninety percent of total class hours or they will be in violation of the attendance policy.

1. Students not physically attending class during the first ten calendar days from the start of the semester must be dropped from the class for NOT ATTENDING.

2. Students taking an online/internet class must sign in and communicate with the instructor within the first ten calendar days from the start of the semester to indicate attendance in the class. Students not attending class during the first ten calendar days from the start of the semester must be dropped from the class for NOT ATTENDING.

3. Reinstatement requires the signature of the division dean.
   a. In the event it becomes necessary for a student to withdraw from the course OR if a student stops attending class, it is the student’s responsibility to initiate and complete the necessary paperwork. Withdrawing from class may have consequences associated with financial aid and time to completion.
   b. When a student exceeds the allowed absences, the student is in violation of the attendance policy. The instructor MUST withdrawal the student with a grade of “W”, “WP”, or “WF” depending on the date the student exceeded the allowed absences and the student’s progress up to the last date of attendance
   Or
   c. under extenuating circumstances and at the discretion of the faculty member teaching the class, allow the student to continue in the class and make-up the work. This exception must be documented at the time the allowed absences are exceeded.

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d. Absences are counted from the first day of class. There are no "excused" absences. All absences are counted, regardless of the reason for the absence.

4. A student must take the final exam or be excused from the final exam in order to earn a non-withdrawal grade.

5. Students are expected to be in class on time. Arrival to class after the scheduled start time or leaving class prior to dismissal counts as a tardy. Three tardies and/or early departures are considered as one absence unless stated otherwise.

6. It is the student’s responsibility to sign the roll/verify attendance with instructor upon entering the classroom. Failure to sign the roll/verify attendance results in a recorded absence. In the event of tardiness, it is the student’s responsibility to insure that attendance is marked.

7. The student is responsible for all material/announcements presented, whether present or absent.

8. A copy of TCL’s STATEMENT OF POLICY NUMBER: 3-1-307 CLASS ATTENDANCE (WITHDRAWAL) is on file in the Division Office and in the Learning Resources Center.

HAZARDOUS WEATHER
In case weather conditions are so severe that operation of the College may clearly pose a hardship on students and staff traveling to the College, notification of closing will be made through the following radio and television stations: WYKZ 98.7, WGCO 98.3, WGZO 103.1, WFXH 106.1, WWVV 106.9, WLOW 107.9, WGZR 104.9, WFXH 1130 AM, WLVH 101.1, WSOK 1230 AM, WAEV 97.3, WTOC TV, WTGS TV, WJWJ TV, and WSAV TV. Students, faculty and staff are highly encouraged to opt in to the Emergency Text Message Alert System. www.tcl.edu/textalert.asp

ACADEMIC MISCONDUCT

There is no tolerance at TCL for academic dishonesty and misconduct. The College expects all students to conduct themselves with dignity and to maintain high standards of responsible citizenship.

It is the student’s responsibility to address any questions regarding what might constitute academic misconduct to the course instructor for further clarification.

The College adheres to the Student Code for the South Carolina Technical College System. Copies of the Student Code and Grievance Procedure are provided in the TCL Student Handbook, the Division Office, and the Learning Resources Center.

Health care professionals hold the public trust. Academic misconduct by health science students calls that trust into question and academic integrity is expected.

It is a fundamental requirement that any work presented by students will be their own. Examples of academic misconduct include (but are not limited to):

1. copying the work of another student or allowing another student to copy working papers, printed output, electronic files, quizzes, tests, or assignments.
2. completing the work of another student or allowing another student to complete or contribute to working papers, printed output, electronic files, quizzes, tests, or assignments.

3. viewing another student’s computer screen during a quiz or examinations.

4. talking or communicating with another student during a test.

5. violating procedures prescribed by the instructor to protect the integrity of a quiz, test, or assignment.

6. plagiarism in any form, including, but not limited to: copying/pasting from a website, textbook, previously submitted student work, or any instructor-prepared class material; obvious violation of any copyright-protected materials.

7. knowingly aiding a person involved in academic misconduct.

8. providing false information to staff and/or faculty.

9. entering an office unaccompanied by faculty or staff.

10. misuse of electronic devices.

**GRADING POLICY**

| Grading scale | | |
|---------------|---------------|
| 90% - 100% A | W | withdraw |
| 82% - 89% B | WP | withdraw with passing grade |
| 75% - 81% C | WF | withdraw with failing grade |
| 70% - 74% D | I | Incomplete |
| Below 70% F | | |

**Grading Methodology.** The final grade must be 75.000 or more in order to pass the course and progress in the program. Students absent from an examination or presentation will receive a “0” grade for the examination unless other arrangements are made with the individual instructor prior to the examination or presentation day or on the examination or presentation day before the test/presentation is scheduled to be given. It is the responsibility of the student to contact the appropriate instructor to arrange to make up the examination. Arrangements may be completed by telephone. If the instructor is not available, a message should be left on the instructor’s voice mail AND with another member of the faculty or administrative assistant. The instructor will decide the time and method of make-up examinations on an individual basis. Messages sent by other students are unacceptable. The student is responsible for notifying the instructor of the reason for the absence. Grades are posted on Blackboard within one week of administration of tests and examinations.

Students enrolled in courses that are taught online or have an online component may expect to be called upon to attend on campus, labs, testing, or presentations as determined by the program faculty.

**EXPECTATION OF STUDENT TO FULFILL RADIOLOGIC TECHNOLOGY COURSE REQUIREMENTS**

Radiologic Technology students are expected to adhere to all policies outlined in the college catalog/handbook as well as the Radiologic Technology Student Handbook. Violations of any policies are unacceptable. Failure to adhere to college and radiologic technology program policies may constitute dismissal from the program.
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<thead>
<tr>
<th><strong>Course Coordinator:</strong></th>
<th>H. Dave Estep, MHA, RT (R) (CT) (MR)</th>
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<tbody>
<tr>
<td><strong>OFFICE LOCATION:</strong></td>
<td>N/A Distance Learning</td>
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<td><strong>OFFICE PHONE:</strong></td>
<td>843-422-4229</td>
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<td><strong>Email:</strong></td>
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<thead>
<tr>
<th><strong>Alternate Contact:</strong></th>
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<td>Building 4/ 109</td>
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<tr>
<td><strong>Office phone:</strong></td>
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<td><strong>Email:</strong></td>
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