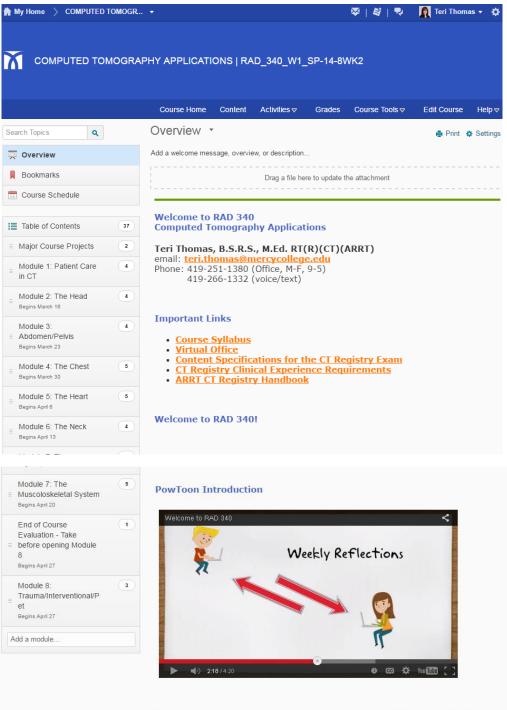
# RAD/IMG 340 8WK

# **Computed Tomography Applications**

I initially designed this 3 credit hour physics course in the fall of 2011 to run spring of 2012.

I was also the instructor for the course (SP 12 8WK2, SP 13 8WK2, SP 14 8WK2).

This document includes screen shots of the overview page, table of contents, the major course projects (2), and modules one and two.



If prompted by your browser, choose to display **both** secure and non-secure items. Close and restart your browser if necessary.



My name is Teri Thomas, BSRS, M.Ed, RT(R)(CT)(ARRT) and I will be guiding you through this course. Before we dive headlong into the world of CT Applications, there are a couple of things we need to do.

First: review your syllabus. Then print a copy. Print several copies. Take one of those copies, fold it into thirds, and stick it in your text book. This single action will give you everything you will need when you find the following thoughts entering your head: "what was I supposed to do?", "when was did this need to be done?", and "seriously, did she really expect me to do that?" That document, the syllabus, is your key to to



document, the syllabus, is your key to to being successful in this course. And a hard copy is a good thing to have, especially when there are electronic issues.

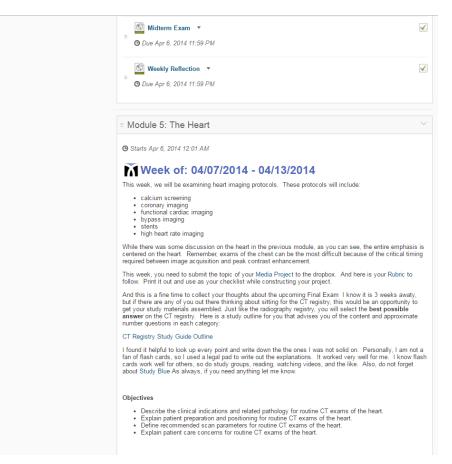
Second: we can't have a discussion or form a learning community without knowing a little about each other. I know, you done this exercise a thousand times. But some of us (like me) are coming in in the middle of the game. So, humor me and tell it all again through the "Introduce Yourself" link. This is what I want you to do: go to the discussion board and answer the fun question. It doesn't need to be a book, but at least a good 5 sentence paragraph. Include a pic, a video, or a cartoon, or your favorite quote that reflects you (not required, but it does make it interesting). I will oblige with my answer to that all important question, too.

Third: look over the rubrics for the discussion board, weekly assignments, and projects. Do what they say. Better still, exceed the expectations. If it says "use APA format", use APA format. I do not always require an abstract, but sometimes I do. Just follow what the assignment says. Pay attention to word/page limits. Some will be minimum (no more than...), some will be maximum (not to exceed....). Follow all those writing rules in grammar and punctuation that you have learned over the years. I will state, state, and restate expectations pertaining to assignments. If you are still unclear, just ask. My job is all about you.

Fourth: remember, my job is all about you. If you have a problem, ask me. In the syllabus is every way to contact me known to man. You can email, call me, text me, or visit me at the college (1st floor Professional Buliding, Mon.- Fri. 9-5, and the candy jar is always open there).

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:=	Table of Contents	37	New	
	Major Course Projects	2	E Signment Information Article Critique	$\checkmark$
	Module 1: Patient Care in CT	4	E Media Project 💌	$\checkmark$
	Module 2: The Head Begins March 16	4	⊨ Module 1: Patient Care in CT	~
	Module 3: Abdomen/Pelvis Begins March 23	4	Week of: 03/10/2014 - 03/16/2014	
	Module 4: The Chest Begins March 30	5	Welcome to your first module in RAD 340 Computed Tomography Applications! This wee Yourself" post is due. During Module One, we will review technical principles, and then w our study of clinical protocols in the following modules. We will also examine dose consist protection issues. As you read your text, think about how you can apply dose in a respo	ve move forward with derations and radiation nsible way in any
	Module 5: The Heart Begins April 6	5	radiography exam. The article I posted for you to read discusses pediatric dose. We ne time we are imaging a child, they have a lifetime to live after the exam and that gives the absorbed a much greater opportunity (in years) to do damage. And keeping in mind, if th exam, they are bound to have more, in some cases, many more, adding to their lifetime	e radiation they have ey have had one
	Module 6: The Neck Begins April 13	4	Please refer to your syllabus often for more details about your weekly assignments. Don' college email regularly and the course news section frequently for important updates and	
	Module 7: The Muscoloskeletal System Begins April 20	5	As always, if you have questions about anything, contact me, either through the virtual or voice. The virtual office is great, because everyone can benefit from the answers to you Remember, you are asking a question everyone else has.	
	End of Course Evaluation - Take before opening Module 8 Begins April 27	1	Objectives           • Explain technical principles and applications of MSCT           • Distinguish between different dose considerations when selecting CT protocols.           • Describe the fundamental principles of radiation protection used in CT	
	Module 8: Trauma/Interventional/P et Begins April 27 Add a module	3	New •       Add Existing Activities •         Introduce Yourself •         •	
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			= Module 2: The Head	~
			<b>©</b> Starts Mar 16, 2014 12:01 AM	
			This week, we will begin our study of CT protocols by examining protocols for the brain. A through this course we will start with the most frequently performed exams presented clini most common exams in CT are brain studies followed closely by the abdomen. Fair warning: please remember that your Weekly Quizzes can cover content from the Cha	cally. By far the pter Reading, Article
			of the Week, lectures and videos presented this week. It's all about building connections, factors that reside under the umbrella of critical thinking.	one of the many
			Objectives           • Describe the clinical indications and related pathology for routine CT exams of the I           • Explain patient preparation and positioning for routine CT exams of the brain.           • Define recommended scan parameters for routine CT exams of the brain.           • Explain patient care concerns for routine CT exams of the brain.	orain.
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Module 3: Abdomen/Pelvis	~
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Week of: 03/24/2014 - 03/30/2014	
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To avoid a deduction of points, remember to have your Article Summary po your Classmate Comments due by Sunday. See syllabus for word count an forget your Article Critique will be due at the end of Module 4. That would r choose your article, if you haven't already done so. Maybe even read it. B way of slipping away	d additional requirements. Don't nake this a fantastic week to
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<b>~</b>	the CT technologist, exams of the een image acquisition and peak
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Module 6: The Neck

() Starts Apr 13, 2014 12:01 AM

# Week of: 04/14/2014 - 04/20/2014

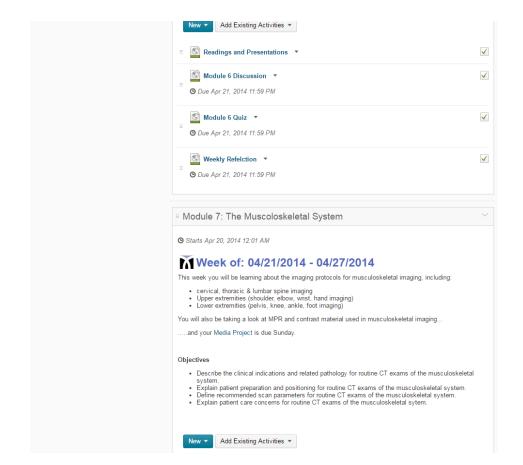
This week, we will be examining neck imaging protocols. These protocols will include:

- Sinuses
  Facial bones imaging
  Nasopharynx, oropharynx and oral cavity
  MDCT of the hypopharynx and larynx

This is a pretty short chapter, but don't let it fool you. It is important information on common and seldom seen exams in CT. Beside, it frees up time for you to work on your Media Project! Here is the Grading Rubric for the project. Print it out and keep at hand. It's your life preserver!

#### Objectives

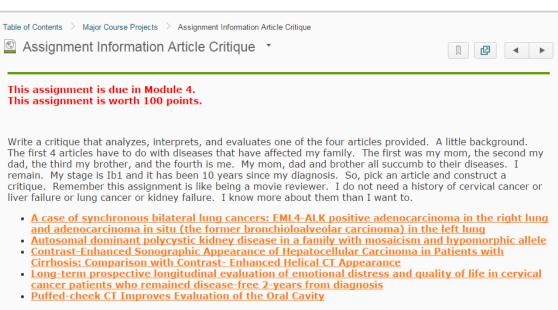
- Describe the clinical indications and related pathology for routine CT exams of the neck.
   Explain patient preparation and positioning for routine CT exams of the neck.
   Define recommended scan parameters for routine CT exams of the neck.
   Explain patient care concerns for routine CT exams of the chest.



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E         Oute: Media Project         ▼           © Due Apr 27, 2014 11:59 PM	
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Weekly Reflection  B Due Apr 27, 2014 11:59 PM	
End of Course Evaluation - Take before opening Module 8	~
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Module 8: Trauma/Interventional/Pet	$\sim$
Starts Apr 27, 2014 12:01 AM & All conditions must be met Completes 1 attempt(s) on the survey: 14-SP RAD-340-W1 8wk2 (Thomas) End of Course Evaluation	
Week of: 04/28/2014 - 05/04/2014 You have arrived! This is the final week of Computed Tomography Clinical Applications. Throughout this course, we have looked at imaging protocols in CT, patient care, and a light physics review. You will be taking your final exam. You have ample time to answer the 75 questions (2 hours), so gather your notes, books, an keep that browser open while you take it. With the final, tools are acceptable, but it is not a group project, so please work alone and no sharing. This week you will be learning about the imaging protocols for trauma imaging, as well as CT-guided interventions and PET/CT, including: • Minor and blunt chest and abdomen trauma imaging • Head, spinal and penetrating trauma imaging • CT-guided abscess drainage of the chest, abdominal, and pelvic region • CT-guided abscess drainage of the chest, abdominal, and pelvic region • CT-guided abactures (needle biopsy) for the lung, mediastinum, liver, pancreas, retroperitoneum, kidneys, adrenals and bone • CT-guided abactures (needle biopsy) for the lung, mediastinum, liver, pancreas, retroperitoneum, kidneys, adrenals and bone • CT-guided abactures (needle biopsy) for the lung, mediastinum, liver, pancreas, retroperitoneum, kidneys, adrenals and bone • CT-guided abactures (needle biopsy) for the lung, mediastinum, liver, pancreas, retroperitoneum, kidneys, adrenals and bone	up
complications. This week, all work, exams included must be completed by <b>Saturday at 11:59 pm!</b>	
Objectives           • Describe the clinical indications and related pathology for routine Trauma/Interventional/PET CT exams.           • Explain patient preparation and positioning for routine Trauma/Interventional/PET CT exams. Define recommended scan parameters for routine Trauma/Interventional/PET CT exams.           • Explain patient care concerns for routine Trauma/Interventional/PET CT exams .	
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E Readings and Presentations •	$\checkmark$
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#### Χ COMPUTED TOMOGRAPHY APPLICATIONS | RAD\_340\_W1\_SP-14-8WK2 Course Home Content Activities マ Edit Course Help ⊽ Search Topics ۹ Major Course Projects \* 🖶 Print 🔅 Settings Overview Add dates and restrictions. ✓ Published ▼ Add a description Bookmarks Add Existing Activities 💌 🍫 Bulk Edit Course Schedule S Assignment Information Article Critique $\checkmark$ Table of Contents 37 2 Maior Course 🛐 Media Project 🔹 ✓ Projects Module 1: Patient Care 4 Add a sub-module. in CT Module 2: The Head 4 Begins March 16



The puffed-cheek CT article is just plain cool. No one in my family, (or the family of anyone I know) has been prescribed this exam.

#### Assessment

The body of the paper will be 4 to 5 pages in APA style. The paper will include a title page, abstract, main body (4-5 pages) and a reference page(s). Must use correct in-text citation and have a minimum of two outside supporting references and a minimum of two text book citations. Here is an APA template you can use for this and for other papers in your future. Save it on your computer and you can edit it anyway you want:

#### APA Paper Template

Use the rubrics below as your checklist for clarity and content quality:

- <u>Critiquing an Article</u>
- Rubric for Article Critique

Remember, a critique is not a report. You are not reporting on the findings alone; those are a very small part of the assignment. There are other aspects you need to include. Consult the rubric for your guide to the correct content of your paper. If you are still in doubt, here is a sample paper for you to look at:

# <u>Sample Article Review</u>

I thought I would include a link to the <u>OWL website</u> to answer any and all of your APA format questions. Seriously, this is the ultimate APA authority.

Following the rubrics will ensure your success with the project. If you run into difficulty of any sort, post the issue on the discussion board, call/text or email me. I am here for you....always.

And speaking of "always being here for you", help with writing can be found at the Writing Center:

Writing Center: 419-251 Mercy College of Ohio Division of Student Formati	1-1734			
Writing Center for DE Stud				
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• <u>Submit to the dropbox here</u>				
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Activity Details	Learning Objective	es	Completion Summary	
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Here is the rubric for the assignment:

<u>Rubric for Media Project</u>

Assessment

This assignment is worth a total of 200 points.

### Topic Submission (Module 5): 20 points

In a one page word document, submit the topic you would like to propose for this project. In the document, describe:

- What is the topic
- Who is your audience
- The type of media you will be using
  How this is project will aid in patient education

There is no need for a cover page or abstract. This is a one page assignment.

• Submit your topic to the dropbox here

### Submission of the Media Project (Module 7): 180 points

Post a link to your project right to the Media Project Discussion Board so we all can see and comment on your creations. Comment on the work of at least two other classmates. If you have a hard time linking it, let me know and I can help.

Submit your link to the discussion board

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Table of Contents $\rightarrow$ Module 1: Patient Care in CT $\rightarrow$ Introduce Yourself	
Introduce Yourself ·	
Let's put science aside for just a couple of minutes. Let's get to know each other a little bet	ter.
Imagine you have been living on a space station for one year. Suddenly, all of the compute you have 15 minutes to evacuate the space station before all of the life support systems fa allowed to take 5 items with you. As fast as you can, list the items. Then explain why you chose. This part is due Thursday at 11:59 PM	il. You are only
Then:	
Comment on the selections of two other classmates by Sunday at 11:59 PM.	
Assessment	
Original Post by: Thursday 2 Peer Responses by: Sunday This assignment is worth 20 points	
<u>View the Discussion Rubric for this assignment</u>	
Discussion Area	
Your posting should be completed by the due date provided in D2L's task list below.	
<u>Click here to enter the discussion</u>	
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Table of Contents 🔰 <u>Module 1: Patient Care in CT</u> 🌾 Readings and Presentations

Readings and Presentations





Click the pic and learn

#### Readings

Romans, L. (2011). Computed Tomography for Technologists, A Comprehensive Text

- Chapter 12
- Chapter 13
- Chapter 14

Seeram, E. (2009). Computed Tomography: Physical Principles, Clinical Applications, and Quality Control (3rd Ed.)

• Chapter 19 pp. 451 - 458

As you read Part 1 of your text this week, you will become familiar with the material covered in sectional anatomy and CT I, along with, perhaps some material you haven't yet explored. It seems like a lot of reading, but try this: Read a chapter and take a break. Go outside, make a coffee (or run out to get some, that's what I would do). But take a break between chapters. Not that there is necessarily a lot of pages to read, but the information is dense and complex. Give it a little time to settle in. Then move ahead. Just a suggestion. Of course, if the content is so riveting and you realize you've finished it all in one sitting, well, then, that's fine, too. Whatever works for you :)

#### Article of the week

#### • Patient dosimetry study of a paediatric CT examination

This is a fine article on paediatric dose and CT. Read it over.

#### Presentations

Listen to the two lectures over the course of your week. Again, some of this information is a good refresher for most of you, and some of the information my new to you. Print out the power point slides if you like and follow along. It might help to print them to take notes on as well.

<u>Quality Assurance</u> (<u>Printable PDF</u>)
 <u>Injection Techniques</u> (<u>Printable PDF</u>)

*If prompted by your browser, choose to display both secure and non-secure items. Close and restart your browser if necessary.* 





Table of Contents  Module 1: Patient Care in CT	Module 1 Quiz	
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Gather your materials.		
30 questions. 90 minutes. 40 points.		
Good luck!		
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• Click here to go to the exam		
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Readings and Presentations



Click the pic and learn

#### Readings

#### Romans, L. (2011). Computed Tomography for Technologists, A Comprehensive Text

- Chapter 15: Neuroanatomy: Brain
- Chapter 19: read about the head and CTA of the head and neck, perfussion studies and stroke for now. We will revisit this chapter in Module 6 when we cover the neck (in more detail), facial bones and sinuses.

# Seeram, E. (2009). Computed Tomography: Physical Principles, Clinical Applications, and Quality Control (3rd Ed.)

- Chapter 17: Again, read the head and cerebral vessels sections. We will come back for the neck and spine later.
- Chapter 19: pp.458 461

#### Article of the week

# Paranasal sinus pathologies in patients presenting with headache as the primary symptom

Please read the article and then find one to summarize for the discussion board. You are all doing a great job!

#### Presentations

Again, I would break up the lectures with a walk or food or something. Granted, they are not long, but the information is rich and it's easier if you give each a little "soaking" time.

- Neurological Imaging Procedures Part 1 (Printable PDF)
   Neurological Imaging Procedures Part 2 (Printable PDF)
- <u>Neurological Imaging Procedures Part 2</u> (<u>Printable PDF</u>) If prompted by your browser, choose to display **both** secure and non-secure items. Close and restart your browser if necessary.



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COMPUTED TOMOGRAPHY APPLICATIONS   RAD_340_W1_SP-14-8WK2							
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Table of Contents > Module 2:	2						
Click on your name and post a reflection on your week. The only guideline is it must be at least a paragraph.							
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Discussion Area Your posting should be		ate provid	ed in D2L's t	ask list be	low.		