NEW YORK CITY COLLEGE OF TECHNOLOGY
CITY TECH
DEPARTMENT OF RADIOLOGIC TECHNOLOGY & MEDICAL IMAGING

Bachelor of Science in Radiological Science
RAD 3629 HEL14 – Hybrid

Advanced Anatomy with Pathophysiology

(Often taken by MR CT and General – all 3 Conc students)

Course Syllabus
Fall 2022 - Wednesday 6:00 – 8:30 pm
Classroom: A-407

Hybrid Course

Instructor: Professor S. Joseph, EMHA, RT (R) (CT)
Phone: xxxxxxx - Email: sijoseph@citytech.cuny.edu
Office Hour: Wednesday 4:55pm –5:55pm – Blackboard Collaborate Ultra

Guest Instructor: Subhendra Sarkar, PhD RT(R MR CT N) CNMT, DABMP

Classroom: A-407 (approx once a month used for the Face/Face day)

IMPORTANT:
Please sign on to Zoom on time. Your anticipated cooperation is greatly appreciated.

Zoom Link:

Revised: **August, 2022**

TABLE OF CONTENTS:

Prerequisites	p. 3
Course Description	p. 3
About this Course	p. 3
Technology Requirements	p. 3
Required Skills	p. 3
Course Objectives	p. 3
Recommended Textbooks	p. 4
Teaching Methods	p. 4
Assignments	p. 4
Course Outline	p. 5
Course Requirements and Assessment	p. 9
Course Grading	p. 9
Active Participation	p. 9
Instructor Communication and Availability	p. 10
Course Organization on Blackboard	p. 10
Midterm Exam	p. 11
Article Summary	p. 11
Final Exam	p. 11
Term Paper Content	p. 11
Term Paper Format	p. 11
Term Paper Grading	p. 12

PREREQUISITES: LIB 1201, RAD 3527

COURSE DESCRIPTION:
This course focuses on the location and identification of both normal and pathological conditions for structures in all body planes. Sectional Computed Tomography and Magnetic Resonance images are reviewed. Emphasis is placed on accurately identifying structures and recognizing abnormalities critical to diagnosis and treatment and assisting physicians with a prognosis. Clinical features of tissue characteristics and the imaging modality best indicated for a specific pathology.

ABOUT THIS COURSE:
This course will be **delivered partly face-to-face and partly online with video conferencing for select sections**. Students are expected to fully participate and contribute regularly to completing assignments and other course requirements. Students are also responsible for their own learning and must discipline themselves accordingly.

TECHNOLOGY REQUIREMENTS:
This course is delivered fully online, therefore, reliable internet connectivity is a must and will facilitate a productive and rewarding online experience. Also, students are required to utilize their City Tech email account. I aim to ensure that you have all the necessary resources available to successfully complete your course work.

Many of you have been using Bb and are familiar with the system. For any student who is not accustomed to using Bb, it is best to visit the following:

- http://websupport1.citytech.cuny.edu/websupport1/it/online/students/main.htm
- http://www2.cuny.edu/wp-content/uploads/sites/4/page-assets/about/administration/offices/cis/core-functions/cuny-blackboard/user-guides/student/FAQ_for_student_Brochure.pdf

REQUIRED SKILLS:
- Microsoft Word
- PowerPoint
- Internet Searches and upload/download files
- Send/receive email attachments

COURSE OBJECTIVES:
Upon completion of RAD 3629:

Instructional Objectives*: For the successful completion of this course, students should:*	***Assessment:** Instructional Activity, Evaluation Methods and Criteria*
Demonstration skills: The student will competently recognize and identify normal cross-sectional anatomy on CT and MR sections.	Text book reading, evaluating cross-sectional images, work, online discussions on cross-sectional anatomy images.
Define the terminology used in the study of disease	Text book Reading, Power Point presentation, online discussions on pathophysiology.
Describe the general principles and mechanisms of disease	Text book reading, Power Point presentation, online discussions on pathophysiology.

Describe the physiological response in inflammation and cell injury due to pathological insult	Text book reading, Power Point presentation, online discussions on pathophysiology
Describe the common etiology, signs and symptoms, diagnostic tests, typical course and management of common diseases and disorders of body systems	Reading, Power Point, online discussions on pathophysiology
Distinguish normal anatomical structures on CT, MRI, ultrasound, nuclear medicine, fusion interventional and cardiac catheterization lab images in the transverse axial, coronal, sagittal and orthogonal (oblique) cross-sectional imaging planes common to each modality within the: Head Neck Thorax Abdomen Pelvis Body imaging Extremities – large joints	Assigned reading material from the Textbooks, Power Point presentation, research, documentation and presentation of research writing.
Distinguish common pathologies recorded on multiplanar images.	Reading, evaluating cross-sectional images regarding pathological findings.

REQUIRED TEXTBOOK:

The following textbooks are required. They are only recommended as follows:

- VanMeter, K.C. & Hubery, R. J. *Gould's Pathophysiology for the Health Professions*. 5th ed. St. Louis, MO:
  Elsevier Saunders; 2014. ISBN 978-1-4557-5411-3
- Kelly, L, Lorrie. (2008). *Sectional Anatomy for Imaging Professionals*, 2nd Edition, Mosby, Inc.
- Kelly, L, Lorrie. (2008). *Workbook for Sectional Anatomy for Imaging Professionals*, 2nd Edition, Mosby, Inc.

TEACHING/LEARNING METHODS

- Power Point Presentations
- Online discussion
- Face-to face discussion
- Reading and Multimedia viewing
- Article Summary
- Research paper
- Midterm and Final Exams

ASSIGNMENTS:

Assignment due dates will be strictly observed. Failure to post an assignment by the due date will result in grade reduction of 25 points for each overdue day. Follow the course outline on p.5 of this document and note all due dates to avoid missing an assignment.

COURSE OUTLINE:

Week	Topic	Activity	Assignments
Wk#1 **August 31st** **Zoom Webinar** **Syllabus** **Prof Joseph &** **Guest Dr. Sarkar**	1. Introduction of selves 2. Walkthrough of the course syllabus **3. Plans by primary & guest instructors**	1. Your current job that you enjoy 2. Your plan for CT & MR career	
Wk#2 **September 7th** **Zoom Webinar** **7:45pm-8:25pm** **Dr. Sarkar**	4. Introduction to Pathophysiology 5. Head and Brain (I) A. Surface Anatomy B. Sinuses C. Facial Bones D. Facial Muscles *MRI basics*	3. Lecture on disorders in cell function and growth 4. Lecture and Discussion on the head & brain, including: surface anatomy, sinuses, facial bones & facial muscles.	1. Introduction to Pathophysiology Chapters 1 2. Read Sectional Anatomy for Imaging Professionals Chapters,1,2-pages 17-84 3. Assignment #1 due 9/13 at 11pm
Wk#3 **September 14th** **Zoom Webinar** **7:45pm-8:25pm** **Dr. Sarkar**	4. Inflammation & Healing 5. Head and Brain (II) E Cranial Bones F. Lobes of the Brain G. Cranial Nerves H. Brainstem *MRI careers-technologists vs physicians*	3. Inflammation & healing 4. PPT lecture and Discussion on the head & brain, including: cranial bones, lobes of the brain, cranial nerves & brainstem.	3. Pathophysiology Chapter 5 4. Read Sectional Anatomy for Imaging Professionals Chapter 3, pages 85-161 Assignment #2 due 9/20 at 11pm
Wk#4 **September 21st** **Zoom Webinar** **7:45pm-8:25pm** **Dr. Sarkar**	5. Brain Vascular & Neural Pathophysiology 6. Head and Brain (III) I. Arteries J. Veins K. Ventricular System L. Meninges M. Basal Ganglia *MR Angiography of head/neck: current & future*	5. Nervous System 6. PPT lecture and Discussion on the head & brain, including: arteries, veins, ventricular system, meninges & basal ganglia.	5. Pathophysiology Chapters 4, 14 6. Read Sectional Anatomy for Imaging Professionals Chapter 3, pages 127-147 Assignment #3 due 9/27 at 11pm
Wk#5 **September 28th** **Face-to-Face** **Dr. S. Sarkar** **7:45pm-8:25pm**	7. Head and Brain (IV) N. Orbit O. Anatomical structures of brain P. Lines of angulations Q. Anatomical landmarks MRI: *Identification of pertinent anatomy and/or pathology-head neck*	7. PPT lecture and Discussion on the head & brain, including: orbits, anatomical structures of the brain, lines of angulations and anatomical landmarks.	7. Read Sectional Anatomy for Imaging Professionals Chapter 3, pages 72-84 Assignment #4 due 10/11 at 11pm

Wk#6 **October 5th** **(NO Class)**	***8. School follows a Monday schedule***	8.	8.
Wk#7 **October 12th** **Zoom Webinar** **Dr. S. Sarkar** **7:45pm - 8:25pm**	9. Neck A. Bones B. Organs C. Vasculature and neurovasculature D. Musculature MRI: *Identification of anatomy and/or pathology-whole body*	9. PPT lecture and Discussion on the neck including: bones, organs, vasculature and neurovasculature & musculature.	9. Read Sectional Anatomy for Imaging Professionals Chapter 5, pages 252-273 Assignment #5 due 10/18 at 11pm
Wk#8 **October 19th** **Face-toFace** **Dr. S. Sarkar** **7:45pm - 8:25pm**	10. Disorders of the Respiratory System 11. Chest & Mediastinum (I) A. Bony thorax MRI: *ACR appropriateness Criteria for MRI and CT*	10. PPT- Diseases of the respiratory system 11. PPT-Lecture and Discussion on the chest and mediastinum including: thoracic vertebrae, sternum, ribs, costal cartilages, scapulae and clavicles.	10. Pathophysiology Chapter 13 11. Read Sectional Anatomy for Imaging Professionals Chapters,4, 6, pages 163-224, 225-278 Assignment #6 due 11/1 at 11pm
WK#9 **October 26th**	**Midterm online**	**Multiple choice**	**2 hours**
Wk#10 **November 2nd** **Zoom Webinar** **Dr. S. Sarkar** **7:45pm-8:25pm**	12. Chest & Mediastinum (II) B. Pulmonary 13. Disease of the Heart and the major thoracic vessels MRI: *Physiology of BOLD effects in functional MR and in ASL*	11. PPT-Lecture and Discussion on the chest and mediastinum including: apices, diaphragm, angles, hilum, lobes (lungs), trachea, carina, primary (mainstream) bronchi and secondary	11. Read Sectional Anatomy for Imaging Professionals Chapter 6, pages 279-292 12. Pathophysiology Read chapter 12 Assignment #7 due 11/8 at 11pm
Wk#11 **November 9th** **Face-to-Face** **Dr. S. Sarkar** **7:45pm-8:25pm**	14. Chest & Mediastinum (III) C. Mediastinum D. Breasts 15. Disease of the Heart and the major thoracic vessels MRI hardware: (a). *Shimming and foreign bodies* *(b). Metal Artifact Reduction in MR*	PPT-Lecture and Discussion on the chest and mediastinum including: Mediastinum: thymus gland, heart, ascending aorta, aortic arch, branches of the aortic arch, descending (thoracic) aorta, inferior vena cava, esophagus, trachea,	13. Pathophysiology Read chapter 10 14. Same Assignment #8 due 11/15 at 11pm

		thoracic duct, lymph nodes, azygos vein and hemiazygos vein. Breasts: musculature, soft tissues,	
Wk#12 November 16th **Zoom Webinar** **Dr. S. Sarkar 7:45pm-8:25pm**	16. Abdomen (I) a. Bones b. Diaphragm and openings c. C. Surface landmarks and regions MRI: (a). *RF Coil selection & placement* *(b). Adv Patient positioning in MR*	15. PPT-Lecture and Discussion on the abdomen: lumbar vertebrae, diaphragm and openings and quadrants; upper left, upper right, lower left, left right.	15. Read Sectional Anatomy for Imaging Professionals Chapter 7, pages 337-350 **Article summary due** Assignment #9 due 11/22 at 11pm
Wk#13 November 23rd **Zoom Webinar** **Dr. S. Sarkar 7:45pm-8:35pm**	17. Abdomen (II) D. Addison's planes E. Branches of the abdominal aorta F. Tributaries of the vena cava 17. Disorders of the Abdominal vascular System MRI: *Advanced MRI Protocol Safety, neurostimulation and SAR*	16. PPT-Lecture and Discussion on the abdomen: Addison's planes; anterior visceral branches, superior mesenteric artery, inferior mesenteric artery, lateral visceral branches artery, parietal branches artery and terminal branches artery.	16. Read Sectional Anatomy for Imaging Professionals Chapter 7, pages 401-421 17. Pathophysiology Read Chapter 12 Assignment #10 due 11/29 at 11pm
Wk#14 November 30th **Zoom Webinar** **Dr. S. Sarkar 7:45pm-8:25pm**	18. Abdomen (III) G. Tributaries of the portal vein H. Abdominal organs and structures 19. Disorders of the gastrointestinal system MRI: *Knowledge of acceptable EGFR Ranges for Gadolinium Contrast Administration*	18. PPT-Lecture and Discussion on the abdomen: Splenic vein, inferior mesenteric vein, superior mesenteric vein, abdominal cavity, liver, gallbladder and biliary system, pancreas and pancreatic ducts, spleen, adrenal glands, urinary system and tract, stomach, small intestine, colon and musculature.	18. Read Sectional Anatomy for Imaging Professionals Chapter 7, pages 351-428 19. Pathophysiology Read chapter 17 Assignment #11 due 12/6 at 11pm

Wk#15 **December 7th** **Face-to-Face** **Dr. S. Sarkar** **7:45pm-8:25pm**	20. Pelvis A. Bony structures B. Pelvic vasculature C. Pelvic organs D. External to pelvis 21. Disorders of the Abdominal pelvis MRI: *Abdomen & Pelvis pathology*	20. PPT-Lecture and Discussion on the pelvis: boney structures, arterial vessels, veins, urinary bladder, small intestine, colon, female reproductive system, male reproductive system.	20. Read Sectional Anatomy for Imaging Professionals Chapter 8, pages 429-487 21. Pathophysiology Read chapter 18 Assignment #13 due 12/13 at 11pm
Wk#16 **December 14th** **Zoom Webinar** **Dr. S. Sarkar** **7:45pm-8:25pm**	22. Extremities Large joints and Associated soft-tissue structures. 23. Disorders of the joints MRI: *Musculoskeletal pathology*	22. PPT-Lecture and Discussion on the extremities: shoulder, elbow, wrist, hip, knee & ankle.	22. Read Sectional Anatomy for Imaging Professionals Chapter 9, pages 489 - 664 23. Pathophysiology Read chapter 9 **Research paper**
Wk#17 **To be determined**	Final Exam	Online	Date to be determined

STUDENTS' RESPONSIBILITIES

A CUNY Portal ID and City Tech Email are required to gain access to Blackboard for assignments and to communicate in this course. Student training and assistance is located in the General Building room G600, additionally WebSupport1 has a beginner's guide to Blackboard. See Blackboard help sections online.

NYCCT 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.

COURSE REQUIREMENTS AND ASSESSMENT

Students enrolled in RAD 3629 must:

1. Actively participate in all lecture sessions online and in-person
2. Complete all required reading/viewing of in-person and online activities.
3. Submit and all assignments
4. Submit a term paper minimum 3 pages for individual work of substance. Cover page, Table of Content, Abstract and Reference pages do not count.
5. Participate in Midterm and Final Examinations.

Grading Policy for all Radiologic Technology courses designated with the prefix RAD

Grading	**Grade Range**	**Quality Points**
A	93 – 100	4.0
A-	90 – 92.9	3.7
B+	87 – 89.9	3.3
B	83 – 86.9	3.0
B-	80 – 82.9	2.7
C+	77 – 79.9	2.3
C	**70 – 76.9**	**2.0 -> RAD 3629 passing grade**
D	60 – 69	1.0
F	0.0 – 59	0.0

COURSE GRADING

Article Summary	15% Due **11/22/2022**
Term Paper	25% Due **12/14/2022**
Active online participation & assignments	20%
Midterm Exam	20%
Final Exam	20%
Total	100%

ACTIVE PARTICIPATION

The contents of this course are extremely important and must be covered in its entirety. Therefore, you are expected to **actively participate** in all assigned activities during face-to-face and online sessions through discussion, inquiry and individual or group activities. This means that, for virtual sessions, it's not enough to just sign in online. You must fully participate in order to receive credits. If you do not have anything to add to a discussion, then asking a poignant question will contribute to the discussion and counted as active participation. Please plan to sign in online, on time (best to arrive early). Late sign on will adversely affect your grade in the Active Participation category.

All information will be available on Blackboard (Bb). You will be expected to access the information asynchronously for the online assignments and/or lecture sessions. Active Participation will be based on answering questions and providing feedback during Zoom sessions, accessing the learning materials on Bb, following instructions, asking questions and posting assignments by the established deadlines. Late posts will be counted as late participation. A 25-point reduction per day will be given for work submitted late. In emergency situations (if Bb is inaccessible), work may be submitted via email with full explanation for the late arrival; otherwise all work should be submitted through the Bb.

Participation will be based on Classroom discussions and on Blackboard assignments (discussion board, and written assignments). Again, students are expected to post their online assignments by the established deadline. Late posts are counted as late participation. A 25-point reduction per day will be given for work submitted late. In emergency situations work may be submitted via email with explanation, otherwise all work should be submitted thru the Blackboard system.

INSTRUCTOR COMMUNICATION AND AVAILABILITY:

On days when class meets face to face, I will be available to meet with you by appointment only; from 4:45pm to 5:55 pm; room A-407. Online appointments will be on Black Board Collaborate Ultra 4:45pm t0 5:55pm. Please be sure to access blackboard at that time and indicate the reason for the appointment.

We will meet face-to-face 4 times during the semester (Rm A-407). Our online class will meet synchronously. Keep in mind that while the Internet is available around the clock, your classmates and I may not be available certain times. Therefore, it is important that you set a schedule (day of the week and time) that you can follow with fidelity, to do your work and participate in discussions. In general, emails that are received after 12:00 pm on Friday through Sunday will not receive an answer before the following Monday. Emails that are sent after 5:00 pm before a holiday will not have a response until the following school day.

Students will be informed in advance if there are any changes to this schedule. It will not be in your best interest to wait until the last minute to ask an important question—plan ahead! You can always post course related questions in the Questions for the Professor forum on the Discussion Board. Students are encouraged to answer other students' questions when able. My email address is on the cover page of this form.

COURSE ORGANIZATION ON BLACKBOARD

ANNOUNCEMENTS: This is the entry point for the class on Blackboard. Announcements provides up to-date class information. The posting of relevant course notices, assignment messages, due date reminders, or course updates are done here. It is vital that students check the announcements section on a very consistent basis.

COURSE DOCUMENTS: All class related materials including Course Syllabus, PowerPoint lectures, Handouts etc. are found here. Materials will be posted on Tuesdays.

MIDTERM EXAM

This exam is comprehensive and will consist of all previously covered materials, discussions and classroom activities. It will be delivered online.

ARTICLE SUMMARY

Each student is required to search and find articles that are related to the course material, published within the past 5 years. The article must be summarized into one single page and double-spaced document with 1-inch margins and Times New Roman 12 font. Please see the outline on p. 5 for due

dates

FINAL EXAM

The final exam will consist of multiple-choice questions that may be delivered online. Questions will come from any of the topics covered during the semester.

TERM PAPER FORMAT

Paper production software application	Microsoft Word Document
Margin settings	Right margin 1 inch; Left margin 1 inch; Top margin 1 inch; and Bottom margin 1 inch. **(I will use a ruler to check margins)**
Page numbers	Position at top of page (header); alignment at Right; do not show number on cover page of document.
Font style	New Times Roman
Font size	12 pt
Line spacing	Double
Orientation	Portrait; single page
Number of pages	At least 3 pages, excluding cover, abstract, graphs and charts, and reference pages etc.
Number of references	At least 3 including: professional journal articles (e.g., radiology imaging, pathophysiology, web sites, books, periodicals, etc. **References must be within 5 years** of the current year. Cover page of journal articles and other references are to be attached to term paper.
Reference style	American Psychological Association (APA). Publication manual of American Psychological Association 6th Ed. Washington, D.C.
Cover page of all assignments and term paper	Text is centered on page and includes: o Title of paper o Your full name o Name of lecturer/professor o Course title and number code o Medical imaging facility, location and facilitator name o Date of submission
Proofread paper	For spelling, grammar, sentence structure, before submitting paper. For this assignment, students should utilize the writing tutors in the College Learning Center and submit documentation of utilization to Instructor.
Paper submission criteria	One (1) electronic copy. Late submission of papers will result in a 25-point penalty for each day beyond submission date – **no exceptions.**

TERM PAPER GRADING:

Grading criteria and point distributions (max 100 points):

1. Paper organization is logical. The topic was thoroughly reviewed and researched. The writing was clear in thought and proceeded in a consistent manner. The paper followed APA format. (**20 points**)

2. The paper was written in a scholarly manner. Resources (books, journal, web, and other sources) were current (within 5 years of course semester. **(15points)**

3. The paper included an introduction to the topic. The overview was succinctly written. The body of the topic was clearly stated and easy to follow and understand. The conclusions drawn were logical, insightful, and referred to the issue addressed. Personal opinions are not acceptable. **(20 points)**

4. Knowledge of the topic was conveyed to the reader. **(10 points)**

5. Impact and relevance to the profession were included in the discussion **(15 points)**

6. At the conclusion of the paper, recommendations for future considerations were mentioned. **(10 points)**

7. References were listed correctly at the end of the paper and citations made in the body of the text to support main ideas, concepts, premises and arguments. **(10 points)**

CLASS RUBRIC FOR ONLINE AND CLASS DISCUSSION GRADING
Discussions that meet all criteria for a grade level will receive the highest points possible at that level. Discussions that meet mixed levels of criteria will receive a score within the point range of the appropriate levels.

A Discussion (90-100): Distinguished/Outstanding
Students may earn an "A" for outstanding discussion participation. Information is full of thought, make connections to previous or current content and contain rich and fully developed ideas.

B Discussion (80-89): Proficient
Students may earn a "B" for discussion participation that shows insight and analysis. Work demonstrates depth and ideas are connected to lesson, research and life scenarios.

C Discussion (70-79): Basic
Students may earn a "C" for discussion participation with limited connections and insights. Analysis is thin and limited with few or no new ideas.

D-F Discussion (10-69): Below Expectations
Students may earn a "D-F" for discussion participation that are superficial; contribute no new ideas, connections etc.

_____