Computed Tomography
RAD-AID Program – Fall 2026

Computed Tomography Class

Fall 2026 Outline

Class	Topic	Chapter	Time
1	***Introduction to CT*** 1. CT Brief Historical Trail 2. Basic principle of CT a. Data acquisition b. Data reconstruction c. Image display and manipulation 3. CT Generations a. 1st b. 2nd c. 3rd d. 4th e. 5th f. 6th g. 7th	PowerPoint	**Self-paced**
2	***CT Instrumentation*** 1. CT Imaging system a. X-ray tube and x-ray production b. Definition of the scanner c. X-ray beam filtration and collimation in CT d. X-ray emission spectra in CT e. CT detectors 2. CT computer system a. Data archiving b. Data manipulation c. Teleradiology	PowerPoint	**Self-paced**
3	***Generating image in CT*** 1. Technique and protocols in CT 2. Generating topogram and slice in CT 3. Data acquisition terminology a. Ray b. View c. Profile 4. Generating CT numbers from linear attenuation coefficients	PowerPoint	**Self-paced**

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4	***Data Acquisition Methods in CT: Conventional and Spiral*** 1. Single Slice Conventional slice by slice 2. Single Slice Spiral 3. Multislice conventional and spiral	PowerPoint	**Self-paced**
5	***CT Reconstruction Methods*** 1. Back Projection 2. Iterative methods 3. Filtered back projection 4. Interpolation . 5. Image Brightness and Contrast 6. Windowing a. Window Level or Window Center(WL or WC) b. Window Width (WW)	PowerPoint	**Self-paced**
6	***3D Rendering and MPR*** 1. SSD 2. VR 3. MIP and minIP 4. Conventional and curved MPR	PowerPoint	**Self-paced**
7	***Image Quality in CT*** 1. Spatial resolution 2. Low Contrast Resolution 3. Temporal Resolution 4. Artifacts 5. QA procedures		**Self-paced**

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8	***Radiation Safety in CT*** 1. Radiation types and sources 2. X-ray interactions with matter 3. Stochastic and non-stochastic effects 4. Radiation monitoring in CT 5. Dose units and limits for exposure to ionizing radiation during CT 6. CTDI 7. MSAD 8. DLP 9. ATCM 10. Equipment design for radiation protection in CT 11. Management of patient radiation dose during the CT procedures 12. Management of imaging personnel during the CT procedures 11. Shielding: lead and bismuth	PowerPoint	**Self-paced**
9	**Scanning of the Head and Facial Bones** 1. Patient preparation 2. Protocol parameters and pathology demonstrated a. CT head with and without contrast b. CT head trauma c. CT of facial bones d. CT of orbits e. CT of TMJ f. CT of paranasal sinuses g. CT of temporal bone-internal auditory canals h. Stereotaxis	PowerPoint	**Self-paced**
10	***Scanning of the Neck and Thorax*** 1. Patient preparation 2. Protocol parameters and pathology demonstrated a. CT thorax with or without contrast for mediastinal structures b. CT of thorax – air entrapment c. CT of thorax – asbestosis d. CT of thorax – High resolution protocol e. CT of thorax – trauma	PowerPoint	**Self-paced**

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11	**Scanning of the Abdomen and Pelvis** 1. Patient preparation 2. Protocol parameters and pathology demonstrated a. CT abdomen with and without contrast b. CT abdomen for pancreas c. CT abdomen for liver d. CT abdomen for renal system e. CT abdomen for adrenal glands f. CT abdomen for gastrointestinal system g. CT abdominal lymph nodes (disease staging) h. CT pelvis without contrast i. CT pelvis for male and female genitourinary system	PowerPoint	**Self-paced**
12	***Scanning of the Spine and Musculoskeletal system*** 1. Patient preparation 2. Protocol parameters and pathology demonstrated a. CT spine (cervical, thoracic, and lumbosacral) b. CT post-myelogram c. CT hand and wrist d. CT elbow e. CT shoulder f. CT pelvis g. CT hip h. CT knee i. CT foot and ankle	PowerPoint	**Self-paced**
13	***CT Angiography*** 1. Patient preparation 2. Protocol parameters and pathology demonstrated a. CT head for circulus arteriosis cerebri (circle of Willis) b. CT head venogram c. CT neck for carotid arteries d. CT thorax for pulmonary embolism e. CT lower extremity venogram for DVT f. CT abdomen for aortic dissection g. CT liver – 3 and 4 phasic protocols h. CT pancreas 3 phasic protocol i. CT renal arteries j. CT Aorto-illiac runoff	PowerPoint	**Self-paced**

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14	***Review and Final Exam*** 1. Review 2. **Final Exam (100 questions)**	Powerpoint	**Self-paced**