HKCRRT Certified Computed Tomography Radiographers

1. Admission of Members

1.1 A candidate may admit as a Member of the HKCRRT (Computed Tomography) and is entitled to use the title MHKCRRT(CT) if satisfying the enlisted requirements.

1.2 Being a Radiographer registered with the Hong Kong Radiographers Board; **AND**

1.3 Have had 5 years of post-registration working experience in radiography, medical imaging or radiotherapy; **AND**

1.4 Academic requirements

1.4.1 A recognized Master degree or above in Computed Tomography; **OR**

1.4.2 A recognized Bachelor degree in medical imaging or related fields or Professional Diploma in Diagnostic Radiography (PDDR) of the Hong Kong Polytechnic University or equivalent, plus a Computed Tomography specialist qualification recognized by the College (as outlined below in Section 2); **AND**

1.5 Have completed the required clinical training or experience (as outlined below in Section 3); **AND**

1.6 Being recommended by the Council.

2. Part A: Academic Requirements

Syllabus

(A) CT Physics and Principles

- X-ray attenuation and projection in CT
- Data flow in a CT system
- Scanning principles of different generations of CT
- Detector physics
- Emerging development of multi-detector-row CT and area-detector CT

(B) CT Imaging protocols and reconstruction

- Optimization of different hardware and software affecting the performance of the scanner in different clinical settings and pathologies
- Scan technique of conventional scanning
- Scan technique of volumetric scanning
- Optimizing scan parameters and reconstruction algorithm
- Managing radiation dose, artifacts and resolution
- Advanced imaging protocols for CT angiogram, CT perfusion and CT virtual endoscopy
- Navigation and stereostatic CT
- Cardiac CT
- Interventional CT

(C) CT Anatomy and Pathology

- Head and neck anatomy including brain, orbit, face, paranasal sinuses, Sella, temporal bone, oral cavity, pharynx, larynx and salivary gland
- Body anatomy including thorax, abdomen and pelvis
- Musculoskeletal anatomy
- Cardiac anatomy
- Common CT pathologies and their CT appearance

(D) Instrumentation

- X-ray generator, x-ray tube design, detectors, data acquisition system (DAS) and cone beam technology, uninterrupted power supply and transformer
- Gantry, patient couch, integrated console, processor system and image storage system
- Dual source CT
- CT Injector system, patient physio-monitoring system, laser printers
- Basic quality assurance of CT system and accessories

(E) Advanced Image Processing

- 3D reconstruction techniques and principles
- Muti-planar reformat, curve reformat, Maximum and minimum intensity projection
- Segmentation, volume vendering, virtual endoscopy and colonoscopy
- Vessel analysis
- Perfusion analysis
- Bone density measurement
- Dental para-sagittal reconstruction
- Stent planning and measurement
- Organ volumetric measurement

(F) CT Contrast Media

- Iodinated and non-iodinated contrast media
- Intravascular or blood pool contrast agents
- Contrast dosage and concentration
- Synchronization with power contrast injector system
- Contrast reaction and safety of CT contrast agents

(G) Radiation Safety and Quality Assurance

- Dose measurement methods
- Radiation protection devices
- Code of practice of radiation safety and guidelines
- Radiation dose optimization and reduction techniques in imaging
- Image resolution, uniformity and linearity
- Air calibration and quality control
- Types of CT phantom and respective functions
- Image artifacts and reduction methods

3. Part B: Clinical Requirements

3.1 Candidates are required to complete 400 CT examinations within a 2-year period. The 400 CT examinations shall include:

- Not less than 200 examinations of head and neck

- Not less than 30 examinations of musculoskeletal regions including spine
- Not less than 150 examinations of thorax, abdomen and pelvis
- Not less than 10 CT angiograms other than cardiac
- Not less than 5 Cardiac CT angiograms
- Not less than 5 interventional CT procedures

3.2 The clinical component requires the candidate's Supervisor to acknowledge completion of the required clinical examinations.

4. HKCRRT Certification Examination for CT

4.1 A CT specialist qualification is available to candidates who have attained a grade of 75% or above in an examination set by the CT Faculty of HKCRRT **AND** performed the required clinical training as outlined in Section 3.

4.2 The Certification Examination will involve a 3-hour paper consisting of not more than 150 multiple choice questions.

4.3 The approximate percentages of questions related to each topic are listed below:

CT physics and principles	*20%*
CT imaging protocols and reconstruction	*20%*
CT anatomy and pathology	*20%*
CT instrumentation	*20%*
Advance image processing	*10%*
CT contrast media	*5%*
Radiation safety and quality assurance	*5%*
	100%

5. Admission of Fellows

5.1 A candidate may admit as a Fellow of the HKCRRT and is entitled to use the title FHKCRRT (Certified CT Radiographer) if satisfying the enlisted requirements.

5.2 Being a Radiographer registered with the Hong Kong Radiographers Board; **AND**

5.3 In possession of the academic & clinical requirements:

5.3.1 A recognized Doctorate in Computer Tomography with 8 years of post-registration clinical experience; **OR**

5.3.2 A recognized Master degree in Computer Tomography or a CT specialist qualification recognized by the HKCRRT; plus 3-year full time equivalent post specialization clinical experience of CT; **AND**

5.4 2 publications in peer-reviewed journals; **AND**

5.5 2 episodes in teaching / lecturing / presentation in open conferences; **AND**

5.6 Being recommended by the Council.

5.7 The clinical experience component requires the candidate's Specialty Supervisor to acknowledge completion of the requirements.

5.8 If applicants apply for fellowship directly, the clinical requirement as stated in Section 3 should be fulfilled.

6. Continuing Professional Development (CPD)

6.1 Once certified in computed tomography (CT), the radiographer must complete 45 CPD credits in each triennium, of which 15 credits are relevant to CT in order to maintain the certified specialist credential.