

## **HKIPM Certificate Course of Basic Radiation Physics**

### **Course Content:**

#### Atomic and nuclear physics

- Radioactivity
- Radioactive decay modes
- Half life, mean life and biological half life
- Nuclear reactions
- Radionuclides production by activation

#### Production of X-rays

- Principle of X-ray production
- Bremsstrahlung spectra and characteristic X-rays
- Quality of X-rays
- Measurement of half value layer (HVL)

#### Interaction of ionising radiation with matter

- Excitation and ionization
- Interaction cross-sections and interaction coefficients
- Rayleigh scattering, photoelectric effect, Compton scattering and pair production
- Relative importance of interaction types
- Multiple scattering of electrons
- Stopping power and linear energy transfer (LET)
- Bragg peak of proton and other heavy charged particles
- Neutrons

#### Radiation detectors and instrumentation

- Principles of radiation detection
- Counting statistics
- Basic electronics design of detector circuits
- Principles and modes of operation of common practical dosimeters (e.g. Geiger counter, proportional counter, scintillation counter, TLD, diode detector etc.)
- Introduction to multi-channel analysers

#### Measurement of ionising radiation

- Exposure, air kerma and dose
- Bragg-Gray principle
- Ion chamber theory, designs and operation
- Absorbed dose standards
- Introduction to dosimetry protocols (e.g. IAEA 398, TG 51, MIRD etc.)
- Patient dose measurements in radiation therapy
- Dose area product and patient dose reduction in diagnostic radiology

**Date, Time and Venue:****The course will be held on:**

| Date         | Time          |
|--------------|---------------|
| 06 July 2013 | 2:00pm-6:00pm |
| 13 July 2013 | 2:00pm-6:00pm |
| 20 July 2013 | 2:00pm-6:00pm |
| 27 July 2013 | 2:00pm-6:00pm |
| 03 Aug 2013  | 2:00pm-6:00pm |

**Duration of course:**

20 hours of lecture

**Venue:**

Room 1102, 11/F Li Shu Pui Block,  
Nursing School, Hong Kong Sanatorium & Hospital

**Speakers**

Ben YU, Ph.D., CertMedPhy, Dept In-charge,  
Medical Physics & Research Department, Hong Kong Sanatorium & Hospital

KY CHEUNG, Ph.D., CertMedPhy, Senior Medical Physicist,  
Medical Physics & Research Department, Hong Kong Sanatorium & Hospital

PM WU, Ph.D, CertMedPhy, Senior Medical Physicist,  
Medical Physics & Research Department, Hong Kong Sanatorium & Hospital

**Target participants:**

Doctors, physicists, radiographers, radiation therapist, biomedical engineers.  
Preference will be given to applicants who are currently working with ionising radiation in hospital environment.

**Assessment:**

A written examination will be held at the end of the course.

**Accreditation:**

This course has been approved by the Hong Kong Institution of Physicists in  
Medicine

CME accreditation by College of Radiologists

(Max. 15 points, 4 points/day awarded under Category B, Code: AM41174C)

CPD accreditation by Hong Kong Radiographer's Board

(pending for approval)

CMD accreditation by Medical Dosimetrist Certification Board

(20 points awarded; Course number: MDCB20130438)

**Course Award:**

A certificate of completion of the course "Basic Radiation Physics" will be issued to the applicants who had passed the examination with at least 75% attendance.

An attendance certificate will be issued if a student has at least 75% attendance but fails the examination.

**Teaching Medium**

The course will be conducted in English, and the written examination will be in English.

**Tuition Fee\*:**

HKD \$750 (HKIPM member)

HKD \$1,500 (member of HKART and HKRA)

HKD \$5,000 (NON-HKIPM member)

\* A 50% discount will be given to HKIPM members from the hospital that provide venue for training.

**Enrollment:**

Complete registration form shall be sent with a cheque for the tuition fee to Ms. Ruby Ho, Secretary of the Hong Kong Institution of Physicists in Medicine at the address give below. The cheque should be crossed and made payable to "Hong Kong Institution of Physicists in Medicine". (Full payment must be made and no refund for withdrawal will be entertained due to any circumstances).

Ms. Ruby Ho  
Medical Physics & Research Department  
8/F, Li Shu Fan Block  
Hong Kong Sanatorium & Hospital  
2 Village Road, Happy Valley  
Hong Kong

**Closing Date for Application:**

28 Jun 2013 (Friday)