

This course provides a practical and theoretical background to Radiotherapy with its main focus on Radiotherapy Physics aspects.

The curriculum covers many aspects and each course includes hands-on practical session on Saturday,

Included in the full cost of the course are a set of lecture notes, a CD of the presentations, lunches, refreshments, cheese & wine and a course dinner.

Radiation Dosimetry, Imaging for Radiotherapy, Treatment Planning and Patient Specific Dosimetry (Sutton site)

Provisional Programmes

Day One: Fundamentals Radiation Dosimetry (Tuesday 8th November 2016)

- *Photon Interaction Mechanisms*
- *Electron Interaction Mechanisms*
- *Fundamental Principles 1 & 2 of Dosimetry*
- *Characteristics & Calculations of Photon Beams*
- *Radiotherapy & Cancer specifically Lung Cancer*
- *Ionisation Chamber Design and Measurements*
- *Practical Implementing of New Techniques in the Clinic*
- **Course Meal**

Day Two: Imaging for Radiotherapy (Wednesday 9th November 2016)

- *Applications of Monte-Carlo Methods*
- *MR Imaging for Radiotherapy Planning*
- *PET Imaging for Radiotherapy Planning*
- *Treatment Planning Margins; ICRU 50, 62 & 83*
- *Stereotactic Body Radiotherapy (SBRT) for Lung Tumours*
- *Photon Beam Algorithms in Treatment Planning*
- *Quality Control in Treatment Planning/Checking*

Day Three: Treatment Planning (Thursday 10th November 2016)

- *Evaluation Tools in Treatment Planning*
- *Prostate Cancer: XBRT Techniques & Trials*
- *Intensity Modulated Radiotherapy Optimization Algorithms*
- *Electron Beam Therapy in Clinical Practice*
- *Inverse Treatment Planning IMRT & VMAT*
- *Large Field Techniques in Radiotherapy*
- *Dosimetry for Molecular Radiotherapy*

Day Four: Patient Specific Dosimetry (Friday 11th November 2016)

- *Radiotherapy Head & Neck Cancer*
- *Radiotherapy for Breast Cancer: Current and Future Practice*
- *Adaptive Radiotherapy for Bladder Cancer in Clinical Practice*
- *Radiotherapy for Liver Tumours & Oesophageal*
- *Radiochromic Film Dosimetry*
- *In Vivo Dosimetry for Point Dose Measurements*
- *Verification and Image Based Dosimetry for IMRT*
- *Radiotherapy with Protons and Heavy Ions*
- **Cheese & Wine**

Accelerator design and Quality Control, Radiobiology, Brachytherapy and Radiotherapy Verification Imaging (Chelsea site)

Day One: Accelerator Design & QA (Tuesday 7th March 2017)

- *Medical Electron Linear Accelerators*
- *Production of a Clinical Beam*
- *Multileaf Collimators: Characteristics & Commissioning*
- *Accuracy & Quality in Radiotherapy: An overview*
- *Extremes I: kV X-ray Units*
- *Extremes II: Cyberknife*
- *Extremes III: Tomotherapy & Gamma Knife*
- *Quality Control in Linacs*
- **Course Meal**

Day Two: Radiobiology (Wednesday 8th March 2017)

- *Introduction to Cell Biology*
- *Tumour Cell Radiobiology*
- *Radiobiology of Normal Tissues*
- *Fractionation & Iso-effect in Radiotherapy*
- *Modelling the probability of Tumour Control (TCP)*
- *Practical use of Radiobiology in Treatment Planning*
- *Modelling Normal Tissue Complication Probability*
- *Compensation for Treatment Gaps in Radiotherapy*

Day Three: Brachytherapy (Thursday 9th March 2017)

- *Calibration and QA of Brachytherapy Sources*
- *Intracavitary Dosimetry*
- *The Radiobiology of Brachytherapy*
- *Gynaecology Cancers*
- *3D Image based Brachytherapy Planning*
- *Transperineal Prostate Brachytherapy*
- *Radiation Protection issues in Brachytherapy*
- *Radiation Protection in External Beam Radiotherapy*

Day Four: Verification Imaging (Friday 10th March 2017)

- *Quality Assurance in Clinical Trials*
- *IGRT: Accuracy, Frequency & Dose*
- *Image Handling in Radiotherapy*
- *IGRT Techniques*
- *Errors & Margins in IGRT*
- *EPID Imaging in Routine Practice, Dosimetry & Quality Control*
- *Clinical Indications for Brachytherapy*
- *MR Linacs*
- **Cheese & Wine**