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	November 2024	March 2025	Both Weeks
Lectures & workshops	£800.00	£800.00	£1350.00
External PhD Students (Proof Required*)	£450.00*	£450.00*	£700.00*

We use personal information for the purposes of course administration – which includes management of your course registration, processing your payment, communication of course joining information, certificates, post course materials and feedback questionnaire. We also use your contact information to keep you informed of other courses we offer which may be of interest to you. For further information on how we use your personal information, please check our privacy policy at [www.icr.ac.uk/legal/privacy](http://www.icr.ac.uk/legal/privacy) or contact [dataprotectionofficer@icr.ac.uk](mailto:dataprotectionofficer@icr.ac.uk)

### Course administrator.

**Cheryl Taylor**

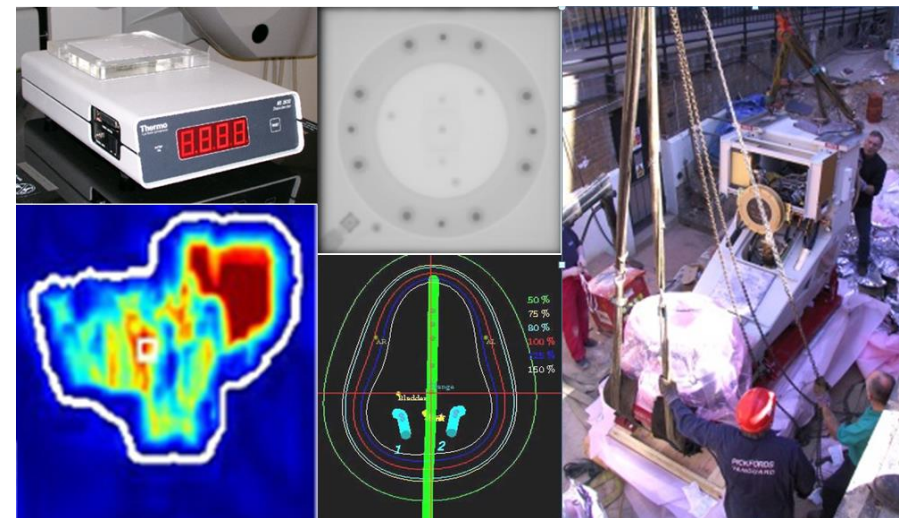
[Cheryl.Taylor@icr.ac.uk](mailto:Cheryl.Taylor@icr.ac.uk)

### Faculty

Mrs S. Alexander, Dr. J Chick, Dr. N Almeida Costa, Dr. A Backshall, Dr. C Baker, Dr. J Bedford, Dr. D Bernstein, Ms. M Bidmead, Mr P Bownes, , Mr. M Clark, Dr. V Cosgrove, Professor R Dale, Dr. A Dunlop, Dr. A Dumbill, Dr. V Hansen, Dr. B Hin, Professor R Huddart, Mr .M James, Mr. D King, Professor C Kirisits, Dr. S Lalondrelle, Dr. H Manderville, Professor P Mayles, Dr. D McQuaid, Mr R Moore, Dr. I Murray, Professor A. Nahum, Mrs. O Naismith, Dr. S Nill, Dr. H Palmans, Dr. H Porter, Dr. A Ranger, Dr. K Roberts, Dr. N Somaiah, Mr. J Talbot, Dr. A Taylor, Dr. M Thomas, Dr. R Thomas, Mr. R Troncer, Professor M van Herk,

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Cancer Research



# A Course in Radiotherapy Physics

**5 - 9 November 2024**

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

**4 - 8 March 2025**

Accelerator Design, Radiobiology, Quality Assurance, Brachytherapy, and Radiotherapy Verification Imaging. (Chelsea Site)

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

**Day One: Imaging for Radiotherapy (Tuesday 5th November 2024)**

*Radiotherapy & Cancer  
MR Imaging for Radiotherapy Planning  
PET Imaging for Radiotherapy Planning  
CT & CBCT for Radiotherapy Planning  
Photon Interaction Mechanisms  
Treatment Planning Margins; ICRU 50, 62 and 83  
Charged Particle Interactions*

**Day Two: Fundamentals (Wednesday 6th November 2024)**

*Applications of Monte Carlo Methods  
Fundamental Principles of Dosimetry I  
Fundamental Principles of Dosimetry II  
Ionisation Chamber Design and Measurements  
Characteristics and Calculations for Photon Beams  
Photon Beam Algorithms  
Radiotherapy for Oesophageal and Liver Cancer*

**Day Three: Treatment Planning (Thursday 7th November 2024)**

*Radiotherapy for Breast Cancer: Current and Future Practice  
Intensity Modulated Radiotherapy Algorithms (IMRT)  
Adaptive Pathway  
Inverse Treatment Planning for IMRT & VMAT  
Stereotactic Body Radiotherapy (SBRT) for Lung Tumours  
Radiotherapy with Protons  
Radiotherapy of the Head and Neck  
Evaluation Tools in Treatment Planning*

**Day Four: Patient Specific Dosimetry (Friday 8th November 2024)**

*Electron Beam Therapy in Clinical Practice  
Large Field Techniques in Radiotherapy  
Treatment Planning 'Air Space'  
Prostate Cancer: EXBRT Techniques & Trials  
Independent Verification for IMRT  
Adaptive Radiotherapy for Bladder Cancer in Clinical Practice  
Quality Control in Treatment Planning  
Practical Implementation of New Techniques in clinic.*

**Day One: Accelerators (Tuesday 4th March 2025)**

*Medical Electron Linear Accelerators  
Production of a Clinical Beam  
Multileaf Collimators: Characteristics and Commissioning  
Accuracy and Quality in Radiotherapy: An Overview  
Extremes I: kV X-ray Units  
Quality Control of Linacs  
Fractionation & Iso-effect & Gaps in Radiotherapy*

**Day Two: Radiobiology (Wednesday 5th March 2025)**

*Introduction to Cell Biology  
Tumour Cell Radiobiology  
Radiobiology of Normal Tissues  
Extremes II: Cyberknife  
Extremes III: Tomotherapy  
Modelling the probability of Tumour Control (TCP)  
Practical use of Radiobiology in Treatment Planning*

**Day Three: Brachytherapy (Thursday 6th March 2025)**

*Calibration & QA of Brachytherapy  
Intracavitary Dosimetry  
The Radiobiology of Brachytherapy  
Gynaecology Cancers  
3D Image based Brachytherapy Planning  
Transperineal Prostate Brachytherapy  
Radiation Protection Issues in Brachytherapy  
Clinical Indication for Brachytherapy*

**Day Four: Verification Imaging (Friday 7th March 2025)**

*Quality Assurance in Clinical Trials  
Image Guidance in Radiotherapy: Accuracy, Frequency Dose  
Image Handling in Radiotherapy  
IGRT Techniques  
Errors & Margins in Image Guided Radiation Therapy  
IT Essentials in Radiotherapy  
Radiation Protection in Radiotherapy  
MR Linacs*