

Course on Monte Carlo methods in Radiation Therapy, based on the Taylor&Francis book (2013)

Course directors: Frank Verhaegen, Joao Seco

Venue: Brasenose College, Oxford, UK

Day 1

PART I Monte Carlo Fundamentals

- 09.00 – 09.00 Welcome Frank Verhaegen & Joao Seco
09.05 - 09.50 History of Monte Carlo *Alan Nahum*
09.55 - 10.45 Basics of Monte Carlo Simulations *Matthias Fippel*
10.45 - 11.15 Coffee break
11.15 - 12.00 Variance Reduction Techniques *Matthias Fippel*
12.05 – 12.45 Applications of Monte Carlo to Radiation Dosimetry: fundamentals *Hugo Bouchard*
- 12.45 - 14.00 Lunch

PART II Application of Monte Carlo Techniques in Radiation Therapy

- 14.00 – 14.50 Applications of Monte Carlo to Radiation Dosimetry: detector response *Pedro Andreo*
14.55 – 15.40 Monte Carlo Modeling of External Photon Beams in Radiotherapy *Frank Verhaegen*
15.40 – 16.10 Coffee break
16.10 – 16.55 Dynamic Beam Delivery and 4D Monte Carlo *Joao Seco*
17.00 – 17.45 Monte Carlo Modeling of External Electron Beams in Radiotherapy *Frank Verhaegen*

Day 2

PART II Application of Monte Carlo Techniques in Radiation Therapy – continued

- 09.00 - 09.45 Patient Dose Calculation and QA *Joao Seco*
09.50 – 10.40 Monte Carlo for kilovoltage and Megavoltage Imaging *Emiliano Spezi*
10.40 – 11.10 Coffee break
11.10 – 12.00 Monte Carlo in biology *Alan Nahum, Frank Verhaegen*
- 12.00-13.30 Lunch
- 13.30 – 14.20 Electrons: Clinical Considerations and Applications *Pedro Andreo*
14.25 – 15.25 Photons: Clinical Considerations and Applications *Michael Fix*
15.25 – 15.55 Coffee break
15.55 – 16.45 Monte Carlo Calculations for Proton and Ion Beam Dosimetry *Hugo Palmans*
16.50 – 17.40 Protons: Clinical Considerations and Applications *Michael Fix*
- 18.30 Course dinner

Day 3

PART II Application of Monte Carlo Techniques in Radiation Therapy – continued

- 09.00 – 09.50 Monte Carlo Methods and Applications for Brachytherapy Dosimetry and Treatment Planning *Brigitte Reniers*
09.55 – 10.45 Monte Carlo Calculations for PET-Based Treatment Verification of Ion Beam Therapy *Katia Parodi*
10.45 – 11.15 Coffee break
11.15 – 12.05 Monte Carlo Studies of Prompt Gamma Emission and of Proton Radiography/Proton-CT *Katia Parodi*
12.10 - 12.50 Discussion Panel: Monte Carlo in Future Studies *All course lecturers*
12.50 Closing the course: Frank Verhaegen & Joao Seco