Fees, Deadlines and Registration

The course fee is £500 if registrated by 20 January
(refundable if cancelled 1 month before course start).
Thereafter £600 (for full-time students £400/£500).
LATE Registration deadline: 7 FEBRUARY

The fee includes notes to accompany each lecture, a CD of all the presentations (as pdf files), the Sunday evening ice-breaker (6pm-8pm), lunches, coffee/tea and light refreshments. The course dinner is £25 (optional extra).

Accommodation is available at the course venue for course attendees at discounted rates: www.leverhulmehotel.co.uk (£114 per night incl. breakfast).

Registration Form

Name:_____

Organisation:_____

Address: _____

Region/Country: _____ Postcode (or equivalent): _____

Telephone: _____ Mobile: _____

Email: _____

I WILL ☐ **WILL NOT** ☐ ATTEND THE COURSE DINNER (Add £25)

I enclose a cheque for £ _____ payable to:

"Clatterbridge Cancer Centre (23 - 27 February 2014)"

Or by Credit Card - MasterCard/Visa/American Express only accepted

MasterCard ☐ American Express ☐ Visa ☐

AMOUNT:_____(sterling or equivalent)

Card No: _____

Expiry Date: _____ 3 digit security code: _____

Address of Cardholder: _____

Region/Country: _____ Postcode (or equivalent): _____

If you wish to pay by direct bank transfer, please send an email to Sue Nixon (see below) - the details of our account will then be sent by return email.

Please send by post/email the completed form (and if cheque, forward payment) to:
Sue Nixon, Radiobiology Course Secretary, Physics Department,
Clatterbridge Cancer Centre, Clatterbridge Road, Bebington, Wirral CH63 4JY, UK.
sue.nixon@clatterbridgecc.nhs.uk Tel. +44 (0)151 482 7860 (also fax)

The Clatterbridge Cancer Centre NHS
NHS Foundation Trust

A course on

Radiobiology & Radiobiological Modelling in Radiotherapy

28 category-1 CPD points
(Royal College of Radiologists UK) awarded

23 - 27 February 2014

Leverhulme hotel
Port Sunlight, Wirral, UK.

See also www.clatterbridgecc.nhs.uk

Sponsored by: RaySearch Laboratories

Supported by: ESTRO European Society for Radiotherapy & Oncology

Endorsed by: cpd now Accreditation by the College of Radiographers; IPEM RTSIG; RCR The Royal College of Radiologists

The Course

The course provides an understanding of both the radiobiological basis of radiation treatment for cancer **and** the use of radiobiological models in the evaluation and optimisation of radiotherapy treatment plans. It is aimed at all professionals involved in Radiotherapy: Clinical/Radiation Oncologists, Physicists, Therapy Radiographers, Dosimetrists/Treatment Planners, Researchers and University Teachers. Days 1 and 2 will cover fundamentals – clonogenic assays; cellular response to radiation; cell-cycle effects; the linear-quadratic (LQ) model; the effects of: oxygen/hypoxia, doserate, radiation quality (LET) incl. protons/ light ions; the principles of fractionation; specific considerations in LDR and HDR brachytherapy; clonogen proliferation and treatment-gap compensation. Radiation Oncologists specialising in breast, head & neck, lung and prostate tumours will discuss the application of the latest radiobiological ideas to these specific cancers.

Days 3 and 4 are dedicated to the fundamentals of (radio)biological models (TCP, NTCP, EUD) and their application to the evaluation and optimisation of radiotherapy treatment plans. The course includes extensive hands-on practice in a "computer lab" with modelling software (LQ-survivor; BIOPLAN; BioSuite and ORBIT) similar to that which is now starting to appear in commercial treatment planning systems.

The faculty comprises Radiobiologists, Physicists and Radiation Oncologists, who are internationally known for their research, as well as being experienced teachers of the various aspects of Radiobiology and their application to Radiotherapy.

Students are encouraged to bring **posters** describing Radiobiological Modelling work from their own research groups; these will be displayed throughout the course.

The Venue

All the lectures and computer sessions will take place at The Leverhulme hotel, Port Sunlight Village, Wirral, Merseyside, CH62 5EZ, UK (www.leverhulmehotel.co.uk). This is located in the historically preserved Port Sunlight village, just 2 miles from Clatterbridge Cancer Centre (CCC) and within easy reach of both Manchester and Liverpool airports. It may be possible to visit CCC's modern, spacious Radiotherapy facilities, which include a 62-MeV proton therapy facility dedicated to treating ocular melanoma.

Scientific coordinator:
Prof. Alan E. Nahum
Clatterbridge Cancer Centre

alan.nahum@clatterbridgecc.nhs.uk
tel: +44 (0)151 334 1155 extn. 4169

The Faculty

Professor Don Chapman
PhD, Penticton, BC Canada (formerly Head of Radiobiology research, Fox-Chase Cancer Centre, Philadelphia) - Fundamentals of (experimental cell radiobiology; the Linear Quadratic model; influence of the tumour microenvironment, LET and track structure.

Professor Roger Dale,
Imperial College, London – Radiobiology of Brachytherapy, models for effects of different doserates; The interaction of Chemo- and Radio-therapy.

Dr. Charles Deehan,
ex-Guys and St. Thomas' NHS Trust, London – Isoeffect calculations for different fractionation regimens; Corrections for gaps in treatment schedules.

Dr. John Fenwick,
Gray Cancer Institute, Oxford university - Statistical methods, parameter extraction in Dose-Volume-Complication analyses;Future directions for NSCLC RT optimization.

Professor Jack Fowler,
London – clonogen proliferation and strategies to counteract it; optimum fractionation schemes.

Dr. Jason Parsons,
Liverpool Cancer Research Centre, Univ. of Liverpool - Ionising radiation-induced DNA damage and repair.

Professor Indrin Chetty,
Henry Ford Hospital, Detroit - Clinical applications of Radiobiological Modelling (Guest speaker).

Dr. Mike Partridge,
Gray Institute for Radiation Oncology and Biology, Oxford University - Functional Imaging in Radiotherapy.

Dr. Marco Schwarz,
Proton Therapy Centre, Trento, Italy - the QUANTEC update of the parameters in the NTCP models. Use of EUD, TCP, NTCP in optimising treatment plans; Individualising lung tumour dose based on NTCP.

Professor Catharine West,
Academic dept. of Radiation Oncology, Christie Hospital and Univ. of Manchester – Introduction to Radiobiology; The Genomics Revolution and Radiotherapy.

Dr. Navita Somaiah
Institute of Cancer Research and Royal Marsden hospital, Sutton – Radiobiology of breast ca. radiotherapy.

Professor Wolfgang Tomé
Albert Einstein College of Medicine, New York – Radiobiological Optimisation of Treatment Planning.

Dr. Colin Baker,
CCC – Models for predicting Normal-Tissue Complication Probability (NTCP) – conceptual basis, mathematical formalisms.

Professor Michael Brada
CCC and Liverpool university - Radiotherapy of non-small cell lung cancer: where next?

Dr. Andrzej Kacperek,
CCC – Heavy-Particle Therapy (protons, carbon ions, neutrons): physical and radiobiological aspects.

Professor Alan Nahum,
CCC – Introduction to Biological models in Radiotherapy; Tumour local control probability (TCP) models; Applications of TCP modelling.

Dr. Geoff Lawrence,
CCC – Cancer induction by radiation, application to RT treatment plans.

Professor Philip Mayles,
CCC – Achieving clinical acceptance of Radiobiologically-based treatment plans.

Dr. Isabel Syndikus,
CCC – Radiobiological considerations in prostate radiotherapy.

Dr. Julien Uzan,
CCC – Individualisation of prescription dose and fraction number using *BioSuite*; Radiobiological inverse planning - *BioProp* prostate dose-painting trial.

Kjell Eriksson,
RaySearch Laboratories, Stockholm (www.raysearchlabs.com), 'biological' optimization software specialists (e.g. RayStation, Pinnacle; Oncentra/ Masterplan; Eclipse), will run exercises on biological models in plan evaluation and optimisation.