

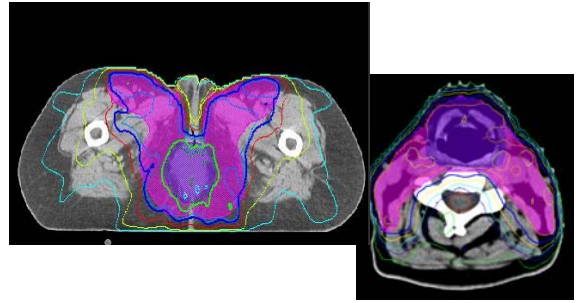
Hands-on course

Intensity-Modulated Radiation Therapy Treatment Planning

Coordinators: Iain Bruinvis, Emmy Lamers and
Jelle Scheurleer

Dates: 03-NOV-2008 – 07-NOV-2008

Venue: INHolland University of Applied Sciences, Haarlem, The Netherlands.



Introduction

The various and rapid developments in the field of 3D imaging, treatment planning and treatment delivery have lead to more accurate and optimal radiotherapy (RT) treatments. During this course the RT professional will acquire the necessary knowledge and skills to perform state-of-the-art *Treatment Planning (TP) of Intensity-Modulated Radiation Therapy (IMRT)*. The course “*IMRT TP*” has been developed by the research group Medical Technology in Oncology of INHolland University of Applied Sciences, together with professionals from the RT departments of the Netherlands Cancer Institute – Antoni van Leeuwenhoek Hospital, the Vrije Universiteit Medical Centre and the Academic Medical Centre (University of Amsterdam). This course is the core part of a complete educational module *IMRT TP*, but can be followed separately. The course itself will be given in collaboration with six treatment planning system companies. The aim is an intensive course with optimum interaction between students and teachers. Therefore the number of participants will be restricted to 30, including the students that follow the complete module.

Target group and aims

The course is suitable for students with a bachelor’s degree or higher who have experience in conventional 3-D treatment planning. Potential students include radiation therapy technologists (RTTs), medical engineers, medical physicists in training and radiation oncologists in training, working in RT departments. RTTs, physicists or engineers working for companies producing RT products may also benefit from this course. We offer professionals involved in RT a programme complementary to their basic training in radiotherapy. The module (course) is part of the MSc course *Radiation Oncology in Europe* and will become part of the *European Master Programme in Radiation Sciences for Oncology* (the Socrates *EMPIRION* project).

After completion of the course the student will be able to:

- Design optimal IMRT treatment plans for complex treatment techniques, using state-of-the art TP systems;
- Understand the principles of IMRT optimisation, including the influence of physical and biological factors;
- Estimate the influence of the size and position of the target volume and organs at risk on TP optimisation;
- Critically analyse the possibilities and limitations of TP systems with respect to inverse IMRT planning;
- Appraise the recent developments in IMRT TP and contribute to the professional development of RT.

Contents

Interactive teaching sessions, focused on situations in practice, are an important part of the course; various experts from renowned RT departments will share their experience in IMRT TP. The core parts of the course are four hands-on sessions, “treatment planning labs” in the afternoons, given in cooperation with the companies on the different commercial TP systems. During these hands-on parts the possibilities of IMRT TP systems will be explored. The TP options comprise 3-D expansion of target volumes, integrated boost techniques, dose and dose-volume constraints, forward and inverse IMRT treatment planning, objective functions (EUD, DVH, min/max or uniform dose), effect of number of segments, segment size, beam energy and use of TCP, NTCP models. Participants will carry out exercises for different tumour sites (breast, prostate, head & neck and lung), exploring the potential of IMRT and the tools the systems offer. Experienced users of the systems and representatives of the companies will guide them. In the morning sessions various experts will provide background information for

the practical exercises. The participants will present the results of the afternoon sessions and motivate their choices made the next morning; the experts will guide the discussions. After that the companies will present their best solutions to the problem. In order to prepare for the course, the participants will be sent introductory exercises to carry out at their home institute. In a half-day programme, preceding the course, these exercises will be discussed and the principles of IMRT will be summarized.

Organizers and teachers

The course is organised by the INHolland University of Applied Sciences Graduate School together with the INHolland research group Medical Technology in Oncology (www.inholland.nl/medicaltechnology), under the chairmanship of Ben Mijnheer. The course directors and local organisers are Iain Bruinvis, Emmy Lamers and Jelle Scheurleer. The teaching faculty includes: Bram van Asselen (MPh), Nina Bijker (RO), Iain Bruinvis (MPh), Eugène Damen (MPh), Uulke van der Heide (MPh), Ben Heijmen (MPh), Elles van der Hoorn (RTT), Joost Knegjens (RO), Bas Kreike (RO), Emmy Lamers (RTT), Ben Mijnheer (MPh), Coen Rasch (RO), Derek Rietveld (RO), Jelle Scheurleer (RTT) and Roel Steenbakkens (RO). MPh = Medical Physicist, RO = Radiation Oncologist, RTT = Radiation Therapy Technologist. The participating companies are: Brainlab, CMS, Elekta, Nucletron, Philips and Varian.

Practical data

The introductory session is organized on Sunday afternoon 02-NOV-2008 from 13:00 to 17:00 h and will take place in Golden Tulip Hotel Lion d'Or in Haarlem, The Netherlands (www.goldentulip.nl). From 12:00 h onwards participants can also register. After the session there will be a welcoming meeting. The actual course starts on Monday morning 03-NOV-2008, ends Friday 07-NOV-2008 around noon and will take place at INHolland University of Applied Sciences (www.inholland.nl) in Haarlem. Registration for the course should be done by e-mail to Hanneke.Dolfsma@inholland.nl before 01-SEP-2008 (maximum number of participants 30); the registration fee is euro 650,=. This fee includes course material, coffees and lunches.

Further information

For more information about the course please contact Iain Bruinvis (e-mail Iain.Bruinvis@inholland.nl or phone +31-647462133), Emmy Lamers (e-mail Emmy.Lamers@inholland.nl or phone +31-20-5122197) or Jelle Scheurleer (e-mail Jelle.Scheurleer@inholland.nl or phone 023-5412820). For all practical information, including accommodation in hotels, public transport from Amsterdam railway station and airport to the course venue, please contact the secretariat of the course: Ms. Hanneke Dolfsma, INHolland University of Applied Sciences, ASAR, Bijdorplan 15, 2015 CE Haarlem, The Netherlands. E-mail: Hanneke.Dolfsma@inholland.nl, phone: +31-23-5412412, mail: P.O. Box 558 2003 RN Haarlem.