The ESTRO School is one of the core pillars of ESTRO. Its courses are a hallmark of the Society’s dedication to the career development of the radiation oncology community and allied professionals, with the ultimate goal of improving patient treatment.

ESTRO educational activities are renowned for quality and diversity and hence attract participants worldwide. The ESTRO School has over 30 years experience of running courses and is continuously challenged to meet the demands of the educational needs of the radiation oncology community. To this end this guide showcases a wide array of basic and advanced courses, 35 in all of which four are new, available in 2016 to professionals at different levels of practice in radiotherapy. Most of these courses will take place in Europe while more than five will be held elsewhere in the world.

In this rapidly expanding digital era, ESTRO continues to broaden its e-learning platform for use in online workshops and live courses through FALCON - Fellowship in Anatomic deLineation and CONtouring and EGLO - ESTRO Global Learning Objects. All educational materials from courses, conferences and projects are continuously uploaded in DOVE (Dynamic Oncology Virtual ESTRO) for easier reference.

All these educational activities would not be possible without the teaching faculties who are distinguished experts in their fields, and are willing to avail some of their time to commit to teaching or sharing their knowledge. To them we are grateful.

Not to be missed in 2016 is the ESTRO 35 conference. An event at which the multidisciplinarity and interdisciplinary components of the radiotherapy practice converge and bring to light new frontiers achieved in the profession per se, as well as its interaction with other professions of oncology. It is an opportunity for networking and building bridges of collaborations.

Later in the autumn, GEC-ESTRO will hold its annual workshop. Keep checking the website for details. Every four years, ESTRO supports the World Brachytherapy Congress under the auspices of GEC-ESTRO. The sixth edition will be hosted by the American Brachytherapy Society (ABS) in San Francisco. More information can be found on the ABS website.

In its vision of the further development of radiotherapy, ESTRO strongly believes in collaboration with other societies to advance multidisciplinary cancer care. To this end we shall this year collaborate on other multidisciplinary meetings such as: EMUC - 8th European Multidisciplinary Meeting on Urological Cancers; ELCC - 6th European Lung Cancer Conference, aimed at thoracic oncology specialists; and the EBCC-10th European Breast Cancer Conference.

Finally I invite you to renew your membership for 2016 and take advantage of the benefits offered in order to advance your professional knowledge and career. You will be glad to know that for the first time ever, you can actually renew your membership for two consecutive years at a reduced fee.

As you will see from this guide, ESTRO puts its members at the heart of its services by offering numerous opportunities of science and education to support career development for the improvement of patient care. All you have to do is make a choice. I hope you enjoy looking through this guide as much as we enjoyed putting it together. More information can always be found on the ESTRO website.

With warm regards

Philip Poortmans
ESTRO President
Every cancer patient in Europe will have access to state-of-the-art radiation therapy as part of a multidisciplinary approach where treatment is individualised for the specific patient’s cancer, taking account of the patient’s personal circumstances.

- ESTRO vision 2020 -
2 ESTRO MEMBERSHIP
ESTRO Membership

Discover the opportunities that only the ESTRO membership can bring to you, your career, your practice, your profession, and ultimately, your patients.

ESTRO is devoted to advancing the goals of radiation oncology. This includes providing its members with outstanding science and education in order to support them in their career advancement.

Join ESTRO and gain access to exclusive member benefits such as:
- Online subscription to Radiotherapy & Oncology (Green Journal)
- Reduced fees for attending ESTRO courses, conferences and joint events
- Online access to scientific material (events webcasts, delineation cases, etc.) through the e-library (DOVE)
- Eligibility for grants, awards, faculties and governance positions.

Add your voice to the 6,000 ESTRO members
ESTRO members are professionals of radiation oncology and beyond: radiation oncologists, clinical oncologists, medical physicists, radiobiologists, radiation therapists (RTTs), dosimetrists, radiotherapy nurses, medical oncologists, surgeons, industry representatives, organ specialists, other medical and non medical professionals, coming from more than 100 countries spread all over the world.

ESTRO offers several categories of membership to fit your professional needs:

**FULL MEMBERSHIP**
- **ACTIVE (95€)**
  You wish to access all the services ESTRO has on offer: subscription to the Green Journal (electronic and printed upon request), reduced fees for attending ESTRO and joint conferences and teaching courses, online access to e-contouring cases, publications and scientific information through our e-library (DOVE), access to the ESTRO Job Centre, eligibility for grants, awards, working groups, governance positions, voting rights and much more.

- **SUPPORTING AMBASSADOR (250€)**
  You wish to be strongly committed to the Society by contributing to the ESTRO’s Ambassador Solidarity Fund. You will have the same benefits as an Active member plus access to the available educational material from the ESTRO live courses, immediate access to the ESTRO events webcasts, access to the VIP registration desk and VIP lounge at the ESTRO annual conference.

As of 2016, full members may sign up or renew for two consecutive years and receive a discount of 10%.

**ASSOCIATE MEMBERSHIP**
- **IN TRAINING (75€)**
  You can benefit from a large range of services and specific reduced fees for attending ESTRO conferences, teaching courses and joint events. To be eligible, you should be under the age of 40, have a relevant university diploma granted less than 10 years ago and currently be in training or enrolled in a full time PhD programme in a European institute.

- **AFFILIATE (55€)**
  You do not require full involvement in the Society but still wish to enjoy some of the more basic advantages on offer. You will have access to the Green Journal (electronic) and to one reduced fee per year at an ESTRO conference or teaching course.

- **CORPORATE REPRESENTATIVE (55€)**
  This category is reserved for individual members working for a company and offers them access to the Green Journal (electronic) and to one reduced fee per year at an ESTRO conference or teaching course.

More information on www.estro.org/members
You can register online at www.estro.org
ESTRO offers European institutes the possibility to pay collectively for the membership of their employees (minimum of 5), who will enjoy all the usual advantages of individual membership. This is the most cost-effective option for institutes who will also benefit from a host of advantages such as a dedicated promotional webpage on the ESTRO website and in the newsletter, a monthly ESTRO public affairs newsletter exclusively tailored to their needs, access to the ESTRO Job Centre as a recruiter, and the privilege to apply for a free booth at the ESTRO Cancer Centres Pavilion during the annual conference.

More information on www.estro.org/members
To register, please contact institutional-membership@estro.org

This category can be granted to individual members who benefit from a joint membership agreement, signed on a case by case basis between ESTRO and a non-European national society or a European young national society. We invite you to check with your national society whether it has an agreement with ESTRO.

ESTRO has a membership programme dedicated for companies that can opt for either regular or gold membership. Gold membership gives the right to a seat on the ESTRO Corporate Council that serves to facilitate the collaboration and coordination between the research and development activities of the companies and the academic and scientific developments within ESTRO.

More information on www.estro.org/members
To register, please contact corporate@estro.org

ESTRO membership runs from the 1st of January to the 31st of December. Radiation therapists (RTTs), dosimetrists, radiotherapy nurses belong to all membership categories without distinction of disciplines. Whatever the membership category they belong to, all these disciplines will benefit from the In training rate when registering for an ESTRO event.

We strongly advise you to renew your membership at least 3 days before the early and late course/event deadlines. The members’ rates will only be applied once the payment has been finalised and your membership has been duly processed and approved internally. This procedure might take up to maximum three working days.

ESTRO Fellow

If you want to be distinguished for your competencies in radiation oncology, consider becoming an ESTRO Fellow.

Being appointed as an ESTRO Fellow will prove your dedication to the profession, to ESTRO and will be seen as the pinnacle of a radiation oncologist’s career.

From the first round in London in 2011 to Barcelona 2012, Geneva 2013, Vienna 2014, and Barcelona 2015, 22 candidates have sat the examination having satisfied the entry criteria. Most of them satisfied the examiners and became ESTRO Fellows.

Candidates for the ESTRO Fellow can register to participate in a written multiple choice exam during ESTRO 35 in Turin in April 2016, provided they are members of ESTRO, and are board certified specialists in radiation or clinical oncology, with at least two years of post training experience. Candidates also need to have collected a minimum of 50 ESTRO credits in the five years preceding their application.

- 70% of these credits (≥35) should be obtained through ESTRO related activities
- 30% of these credits (≥15) can be obtained through national activities related to radiation/clinical oncology
- A minimum of 40% of these credits (≥20) should be obtained through participation in activities that are certified with an exam which the candidate passed.

THE EXAM

The multiple choice exam will contain a mixture of general basic and site specific questions. 55% will be on radiobiology, radiation physics, imaging, target volume and radiation technologies and 45% will be on head and neck, breast, prostate, lung, gynae and rectal cancer. To prepare themselves, candidates can consult the roadmap for preparation of the exam, which is available on the ESTRO website, where the topics to be prepared are summarised and reference articles and books are listed.

www.estro.org/careers-grants/estro-fellow/index

INTEGRATION OF AWARDED FELLOWS IN THE ESTRO SOCIETY

ESTRO fellows will be considered as preferential candidates for ESTRO activities such as education, research, information, guidelines, public relations…

Take your chance and apply for the 6th Fellow examination. Successful candidates will be appointed ESTRO Fellow for a period of five years. They will receive the ESTRO Fellow diploma and their names will be posted on the ESTRO website.

The next ESTRO Fellow exam will take place on 29 April 2016 during ESTRO 35 in Turin. Deadline to submit applications is 29 March 2016.

More information is available on the ESTRO website on:
www.estro.org/careers-grants/estro-fellow/index
2016 EDUCATIONAL PARTNERS OF THE ESTRO SCHOOL

Special thanks to our sponsors:

Special thanks for their participation in teaching courses in 2016:
Accuray, Brainlab, BSM Diagnostica, Eckert & Ziegler BEBIG, Elekta, IBA, MIM Software Inc, Nanovi Radiotherapy, Philips Healthcare, RaySearch Laboratories, Varian Medical Systems

ESTRO wishes to thank all its collaborators in the 2016 teaching courses programme:

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Introduction:
The ESTRO School in 2016

“Improving knowledge, skills and practice to better treat our patients”

It’s a pleasure to share with you the educational programme of the upcoming year. We hope you will enjoy browsing through the 2016 ESTRO Guide and will find it useful to select the course or activity you wish to attend.

On the next pages you will find an overview of the scope of the ESTRO School activities: the live courses that have been successful for 30 years. Other and more educational opportunities are also offered to you during the year: e-learning, the e-library, grants, education at the annual congress…

As part of its mission, ESTRO is striving to provide education to the entire radiation oncology community: whatever your discipline is, your level of experience, there are educational activities tailored to your specific needs.

Throughout the year, updates and further information on all these activities, the mobility grants, the ESTRO online educational tools will be made available continuously on the website of ESTRO and the ESTRO School (www.estro.org or www.estro.org/school).

Improving knowledge, skills and practice to ensure better treatment for our patients: that’s how the annual ESTRO School programmes are always built.

With best regards

Richard Pötter
Chairperson ETC

Christine Verfaillie
Managing Director Education and Science


ETC: Dimos Baltas, Barbara Jereczek Fossa, Karin Haustermans, Ben Heijmen, Peter Hoskin, Michelle Leech, Coen Rasch, Luis Perez Romasanta, Eduardo Rosenblatt, Li Tee Tan.
3.1 EDUCATIONAL ACTIVITIES

Overview

THE ESTRO SCHOOL PRIORITIES

FULFILLING THE SOCIETY’S MISSION THROUGH EDUCATION AND TRAINING

- The ESTRO School is an international institution that strives to improve, professionalise and harmonise knowledge and practice in radiation oncology and associated professions in Europe and beyond.

- The ESTRO School supports the implementation of the European Core Curricula with education and training programmes targeting both young and senior radiation oncology professionals.

- The ESTRO School offers a wide range of live educational activities and online educational resources that allow professionals worldwide to acquire the knowledge, skills and competencies to deliver high quality treatment and care to cancer patients.

FURTHER DEVELOPMENT CRITICALLY IMPORTANT TO REMAIN SUCCESSFUL

- The ESTRO Board will appoint a new director of the ESTRO School, in consultation with the current Core Education Committee. This appointment is based on an open solicitation procedure, according to the specific requirements and responsibilities for the position. The new director will succeed Prof Richard Pötter, who has steered the School in the last ten years through the biggest expansion and change in its history and will finish with ESTRO in Turin 2016.

- The ESTRO School will become more established in the format of an Educational Council, that will include:
  - the academic ESTRO School director who will replace Prof Pötter
  - an educational/administrative director
  - Council members representing the different disciplines in radiation oncology.

- The Educational Council will define the ESTRO strategy for education, delegate tasks to implement this strategy to committees and task forces within the ESTRO School or other ESTRO bodies, and follow up the implementation of these tasks.

PRIORITY PROGRAMMES FOR THE NEXT YEARS

- The ESTRO School will expand and be reinforced with pedagogical expertise. In this way, the School will be able to provide better support for its faculties and be able to increase the learning outcome of its educational activities.

- The number of live courses will gradually increase, with a specific focus on the development of extra educational activities in the Asia Pacific region.

- Alternative teaching and learning programmes such as TTT (Train The Trainer) and blended learning programmes, complementing live courses, will be further developed.
NEW IN 2016

- Palliative radiation oncology
- GI week composed of two back-to-back courses on:
  - Upper GI (esophagus and pancreas)
  - Lower GI (anal and rectal cancer)
- Undergraduate course on basic medical education (Poznan/Anwerp and Groningen/Vienna): Multidisciplinary oncology course for medical students

The 2016 ESTRO Guide provides a comprehensive description of each course: aims, learning outcomes, target audience, content, prerequisites, teaching, assessment methods.

The roadmap to ESTRO courses will help you to select the course that is most suited to your needs (see p 30)

ESTRO faculties are composed of renowned international experts who volunteer to share their knowledge and skills by teaching during these 3-5 day courses.

EDUCATION AT ESTRO CONGRESSES

At all ESTRO annual congresses you can attend:

- One-day pre-meeting courses tailored for each discipline and an interdisciplinary course

- Live contouring workshops (before and during the congress)

- Every morning 7-8 teaching lectures are scheduled for the different disciplines

- Tumour boards: how to make the complex decisions about the individualised treatment of cancer patients in the multidisciplinary oncology setting of “everyday”

Check as of p. 132 in the events section the educational programme of ESTRO 35 in Turin.

ONLINE EDUCATION

Access to quality education is a top priority of the ESTRO School. The School therefore continues to invest in the development of e-learning opportunities as a complement to its live educational offer.

FALCON
Fellowship in Anatomic deLineation and CONtouring (more information on p 114)

ESTRO has developed an innovative and hands-on educational platform for training contouring skills.

The FALCON tool offers several uses:
- Teaching contouring skills in live courses, e.g. in the site specific, brachytherapy and imaging courses
- As part of special workshops offered to teach delineation skills
- In fully online workshops open to participants worldwide
- In individual exercises by accessing the FALCON cases that are online available free to ESTRO members.

DOVE
Dynamic Oncology Virtual ESTRO (more information on p 116)

DOVE is the ESTRO educational platform for radiation oncology. It is the place to obtain up-to-date information on developments in the field of radiotherapy. It currently contains over 11,000 peer reviewed publications such as:
- Webcasts from ESTRO congresses
- Congress abstracts and posters
- All Green Journal articles and ESTRO guidelines

NEW! As of 2016 ESTRO course material also be made available through DOVE to course participants and to Supporting Ambassador members.

EGLO
ESTRO Global Learning Objects (more information on p 117)

The new ESTRO e-learning modules EGLO are definitely not to be missed in 2016. To increase the educational value of the DOVE library, ESTRO plans to develop online learning packages: the EGLOS will group educational material in DOVE on specific topics and combine them with specific tests or exams.

EGLOs will support the ESTRO live courses or can be used independently.
ESTRO MOBILITY GRANTS

ESTRO offers a number of mobility grants every year (previously known as Technology Transfer Grants or TTG).

These grants are made available to radiation oncology professionals eager to visit another institute to learn about or gain experience with a technique, equipment or its application that is not easily available in their own institute and which would be useful to them and their department in future studies or clinical treatments.

There are two application deadlines per year (spring and autumn) and dates are announced on the ESTRO website, as well as by ESTRO Flash reminders and the ESTRO newsletter.

Deadlines: 30 April and 31 October 2016
All applications should be addressed to grants@estro.org
Which course to attend?
2016 Roadmap to Teaching Courses

**Basic Courses**
- Evidence-Based Radiation Oncology
- Physics for Modern Radiotherapy
- Modern BT Techniques
- Basic Clinical Radiobiology
- TVD
- Best Practice in RT (TTT)

**Advanced Courses**
- Combined Drug-Radiation Treatment
- APBI
- Breast Cancer
- Brain Tumours
- Head and Neck Cancer
- Lung Cancer
- Paediatric Malignancies
- Prostate Cancer
- Haematological Malignancies
- Upper GI
- Lower GI

**Site-Specific Courses**
- Palliation
- BT for Prostate Cancer
- Advanced BT for Physicians
- Biological Basis of Personalized Radiation Oncology
- Imaging for Physicians
- Molecular Imaging and Radiation Oncology
- Risk Management 2 modules

**Multimodal Cancer Treatment**
- Radiation Oncologist
- Medical Physicist
- Radiobiologist
- Radiation Therapist
- Other Specialist

**Radiation Therapy Treatment Planning and Delivery**
- BT for Prostate Cancer
- Advanced BT for Physicians
- Biological Basis of Personalized Radiation Oncology
- Imaging for Physicians
- Molecular Imaging and Radiation Oncology
- Risk Management 2 modules

**Biology**
- Biological Basis of Personalized Radiation Oncology
- Imaging for Physicians
- Molecular Imaging and Radiation Oncology
- Risk Management 2 modules

**Imaging**
- Imaging for Physicians
- Molecular Imaging and Radiation Oncology
- Risk Management 2 modules

**Research**
- Research Masterclass in Radiation Physics
- Molecular Imaging and Radiation Oncology
- Risk Management 2 modules

**Best Practice**
- Best Practice in RT (TTT)
- Molecular Imaging and Radiation Oncology
- Risk Management 2 modules
Live Teaching Courses 2016
POSTGRADUATE TRAINING IN RADIATION ONCOLOGY

27 February - 2 March 2016 | Budapest, Hungary
BASIC CLINICAL RADIOBIOLOGY 34

6 - 10 March 2016 | Utrecht, The Netherlands
DOSE MODELLING AND VERIFICATION FOR EXTERNAL BEAM RADIOTHERAPY 36

13 - 16 March 2016 | Florence, Italy
MODERN BRACHYTHERAPY TECHNIQUES 38

14 - 18 March 2016 | Krakow, Poland
PARTICLE THERAPY 40

3 - 7 April 2016 | London, UK
IMRT AND OTHER CONFORMAL TECHNIQUES IN PRACTICE 42

4 - 6 April 2016 | Toronto, Canada
IMAGE-GUIDED CERVIX CANCER RADIOTHERAPY - WITH A SPECIAL FOCUS ON ADAPTIVE BRACHYTHERAPY 44

10 - 13 April 2016 | Barcelona, Spain
TARGET VOLUME DETERMINATION - FROM IMAGING TO MARGINS 46

19 - 22 May 2016 | Lisbon, Portugal
ESNM: ESTRO COURSE ON MOLECULAR IMAGING AND RADIATION ONCOLOGY 48

20 - 22 May 2016 | Tokyo, Japan
MULTIDISCIPLINARY MANAGEMENT OF BREAST CANCER 50

22 - 26 May 2016 | Istanbul, Turkey
MULTIDISCIPLINARY MANAGEMENT OF PROSTATE CANCER 52

25 - 27 May 2016 | Brussels, Belgium
LOWER GI: TECHNICAL AND CLINICAL CHALLENGES FOR RADIATION ONCOLOGISTS 54

28 - 31 May 2016 | Brussels, Belgium
UPPER GI: TECHNICAL AND CLINICAL CHALLENGES FOR RADIATION ONCOLOGISTS 56

29 May - 1 June 2016 | Vienna, Austria
ADVANCED BRACHYTHERAPY PHYSICS 58

5 - 7 June 2016 | Brussels, Belgium
BRACHYTHERAPY FOR PROSTATE CANCER 60

5 - 9 June 2016 | Athens, Greece
CLINICAL PRACTICE AND IMPLEMENTATION OF IMAGE-GUIDED STEREOTACTIC BODY RADIOTHERAPY 62

12 - 17 June 2016 | Porto, Portugal
EVIDENCE BASED RADIATION ONCOLOGY
How to evaluate the scientific evidence and apply it to daily practice 64

19 - 23 June 2016 | Dublin, Ireland
ADVANCED SKILLS IN MODERN RADIOTHERAPY 66

26 - 30 June 2016 | Moscow, Russia
MULTIDISCIPLINARY MANAGEMENT OF LUNG CANCER 68

26 - 29 June 2016 | Florence, Italy
MULTIDISCIPLINARY MANAGEMENT OF HEAD AND NECK ONCOLOGY 70

6 - 10 July 2016 | Chengdu, China
BASIC CLINICAL RADIOBIOLOGY 72

1 - 3 September 2016 | Vienna, Austria
HAEMATOLOGICAL MALIGNANCIES In collaboration with IERG 74

8 - 10 September 2016 | Brussels, Belgium
PALLIATIVE CARE AND RADIOTHERAPY
A course on prognosis, symptom control, re-irradiation, oligometastases 76

11 - 15 September 2016 | Athens, Greece
PHYSICS FOR MODERN RADIOTHERAPY
A joint course for clinicians and physicists 78

9 - 13 September 2016 | Cambridge, UK
BASIC TREATMENT PLANNING 80

14 - 18 September 2016 | Cambridge, UK
ADVANCED TREATMENT PLANNING 82

18 - 22 September 2016 | Florence, Italy
IMAGING FOR PHYSICISTS 84

1 - 4 October 2016 | Avignon, France
COMPREHENSIVE QUALITY MANAGEMENT IN RADIOTHERAPY
RISK MANAGEMENT AND PATIENT SAFETY 86

17 - 20 October 2016 | Montpellier, France
BIOLOGICAL BASIS OF PERSONALISED RADIATION ONCOLOGY 88

23 - 27 October 2016 | Madrid, Spain
IMAGE-GUIDED AND ADAPTIVE RADIOTHERAPY IN CLINICAL PRACTICE 90

24 - 28 October 2016 | Vienna, Austria
BEST PRACTICE IN RADIATION ONCOLOGY – A WORKSHOP TO TRAIN RTT (RADIATION THERAPISTS) TRAINERS
In collaboration with the IAEA - Part I - Train the RTT trainers 92

10 - 12 November 2016 | Amsterdam, The Netherlands
ESOR/ESTRO MASTERCLASS IN RADIATION ONCOLOGY
ACCELERATED PARTIAL BREAST IRRADIATION 94

13 - 16 November 2016 | Paris, France
5th ESO-ESTRO MASTERCLASS IN RADIATION ONCOLOGY 96

19 - 23 November 2016 | Prague, Czech Republic
ADVANCED TECHNOLOGIES 98

20 - 25 November 2016 | Sydney, Australia
EVIDENCE BASED RADIATION ONCOLOGY
How to evaluate the scientific evidence and apply it to daily practice 100

3 - 5 December 2016 | Bangkok, Thailand
PAEDIATRIC RADIATION ONCOLOGY 102

6 - 10 December 2016 | Pune, India
ADVANCED TECHNOLOGIES 104
BASIC CLINICAL RADIObIOLOGY

27 February - 2 March 2016
Budapest, Hungary

TARGET GROUP
The course is aimed at:
• Trainees in radiotherapy
• Radiation oncologists who recognise a lack of basic radiobiological science or want to update their knowledge (i.e. for CME)
• Medical physicists who wish to familiarise themselves with this field
• Physicians from other disciplines administering ionising radiation
• Radiation therapists (RTTs).

COURSE AIM
The aim is to provide an introduction to radiation biology as applied to radiotherapy. The course will cover the basic mechanisms of cell death/survival and the radiation response of tumours and normal tissues. Formulas of tissue tolerance will be explained. The biological basis for current approaches to the improvement of radiotherapy will be described including novel fractionation schemes, retreatment, IMRT, modification of hypoxia, hadron therapy, combined radiotherapy/chemotherapy and biological modifiers of tumour and normal tissue effects.

PREREQUISITES
Before commencing this course participants should:
• Ensure their knowledge of basic biology and physics is at least high-school level
• Familiarise themselves with access to the journals covering radiobiology related to radiotherapy.

LEARNING OUTCOMES
By the end of this course participants should be able to:
• Understand the biology of how ionising radiation is able to effectively treat cancer
• Distinguish radiotherapy and its advantages from other cancer therapies
• Have the essential knowledge of radiobiology necessary for qualifying examinations.

COURSE CONTENT
• A series of basic lectures introducing molecular and clinical radiobiology
• Mechanisms and models or radiation cell killing
• The linear-quadratic approach to fractionation
• Molecular basis of radiation response
• Radiobiology and tolerance of normal tissues to (re)treatment
• Alternative fractionation schedules in radiotherapy
• Tumour hypoxia and the microenvironment
• Combined radiotherapy and chemotherapy
• The volume and dose-rate effect in radiotherapy
• Biological response modifiers (tumours, normal tissues) and molecular approaches to therapy
• Protons and other particles in radiotherapy
• Radiation-induced malignancies.

FACULTY
Course director
Michael Joiner, Radiation Biologist, Wayne State University, Detroit (USA)

Teachers
Rob Coppes, Radiation Biologist, UMC Groningen, Groningen (NL)
Wolfgang Dier, Radiation Biologist, Medical University of Vienna, Vienna (AT)
Vincent Grégoire, Radiation Oncologist, UCL Clinique Universitaire St Luc, Brussels (BE)
Karin Haustermans, Radiation Oncologist, University Hospital Gasthuisberg, Leuven (BE)
Marianne Koritzinsky, Radiation Biologist, Princess Margaret Cancer Centre, Toronto (CA)

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

TEACHING METHODS
• 27 hours of lectures
• 3 hours of tutorials
• 4 hours of discussions.

METHODS OF ASSESSMENT
• MCQ
• Evaluation form.

KEY WORDS
Radiobiology, radiation biology, radiation oncology, radiotherapy.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

WHO?
Michael Joiner
Course director
Melissa Vanderijst
Project manager

Albert van der Kogel, Radiation Biologist, Radboud University Nijmegen Medical Centre, Nijmegen (NL)

Local organiser
Tibor Major, Physicist, National Institute of Oncology, Budapest
DOSE MODELLING AND VERIFICATION FOR EXTERNAL BEAM RADIOTHERAPY

6 - 10 March 2016
Utrecht, The Netherlands

TARGET GROUP
The course is primarily aimed at and recommended for medical physicists and experienced dosimetrists working in treatment planning. The participants should preferably have some practical experience in radiotherapy physics and treatment planning systems. A good medical physics background is required.

COURSE AIM
• To review external beam radiotherapy physics and beam modelling
• To understand the concepts behind dose algorithms and modelling in state-of-the-art treatment planning systems
• To understand and examine the process of commissioning treatment planning systems
• To review dosimetry methods of importance for commissioning and verification
• To enable practical implementation of concepts for dose verification in advanced external beam therapy including SRT and IMRT.

LEARNING OUTCOMES
By the end of this course participants should be able to:
• Identify and interpret the input data requirements for the configuration of beam models
• Illustrate modelling of the patient, treatment beam and energy deposition in the treatment planning process
• Present the concepts behind simple and advanced dose calculation algorithms as implemented on modern treatment planning systems and monitor unit or dose calculation check software tools
• Compare and critically evaluate the tools and methods available for the verification of the calculated dose

• Assess aspects of quality assurance specific to the treatment planning process.

COURSE CONTENT
• Review of basic concepts of fluence, radiation transport and convolution
• Linac head design and multisphere models
• Patient and phantom characterisation for treatment planning systems
• Point, pencil beam and grid based approaches to dose calculation
• 3D, 2D and 3D detectors for measurement
• Use of measured data in beam models and uncertainty budgets
• Monitor unit calculation and relation to beam models
• Commissioning and quality assurance of a treatment planning system
• Dose based metrics
• Practical exercises on monitor unit calculation and modelling.

PREREQUISITES
Before commencing this course you should preferably have attended the ESTRO course ‘Physics for Modern Radiotherapy’ or equivalent.

FACULTY
Course directors
Tommy Knöös, Physicist, Skåne University Hospital, Lund (SE)
Brendan Mc Clean, Physicist, St. Luke’s Hospital, Dublin (IE)

Teachers
Anders Ahnesjö, Physicist, Uppsala University, Uppsala (SE)
Nuria Mania Aspradakis, Physicist, Cantonal Hospital of Lucerne, Lucerne (CH)

ACCREDITATION
Application for CPD recognition is submitted to the European Federation of Organisations for Medical Physics (EFOMP), as a CPD event for medical physicists. Information on the status of the applications can be obtained from the ESTRO office.

TEACHING METHODS
• 21 hours of lectures
• 4 hours of practical workshops
• 1h30 of Q&A.

The course consists of didactic lectures, interactive discussion sessions and practical calculation and modelling sessions. Lectures and preparation workshops will be given on monitor unit calculation and beam modelling. Participants will engage in realistic monitor unit calculation scenario exercises. Participants will also undertake computer based modelling of basic models for photon beam head scatter and kernel based dose calculations.

METHODS OF ASSESSMENT
• MCQ
• Q&A
• Practical
• Evaluation form.

KEY WORDS
Beam models and dose calculation approaches in treatment planning systems, commissioning, verification and quality assurance of treatment planning systems.

FURTHER READING
Please consult the ESTRO website page of this course for further information.
MODERN BRACHYTHERAPY TECHNIQUES
13 - 16 March 2016
Florence, Italy

TARGET GROUP
The course is aimed primarily at trainees in radiotherapy, radiation oncologists, radiation physicists and radiation therapists (RTTs) willing to update themselves on the latest developments. This course is also highly recommended as an essential basis for the advanced course on 3D imaged-based brachytherapy for prostate and gynaecological malignancies.

COURSE AIM
- To cover the basis and general principles of brachytherapy: historical notes on evolution of brachytherapy, sources, after loading systems, imaging for brachytherapy, dosimetry, radiobiology of different time dose patterns (LDR, HDR, PDR and permanent implants), radioprotection, and organisation of a brachytherapy department
- To discuss different technical and dosimetical aspects of interstitial, endoluminal and endocavitary brachytherapy
- To discuss the main clinical subjects: gynaecological (cervix, endometrium), head and neck (oral cavity, oropharynx), urology (a.o. prostate seed implants), breast, skin, soft tissue sarcomas, and paediatric malignancies.

LEARNING OUTCOMES
By the end of this course participants should be able to know the:
- Essentials of brachytherapy sources, physics, applicators and afterloaders
- Essentials of brachytherapy dose planning, and possibilities and pitfalls of stepping source optimisation techniques
- Essentials of low dose rate, high dose rate and pulsed dose rate radiobiology
- Indications and contraindications of brachytherapy in clinical oncology.

COURSE CONTENT
- Sources used in brachytherapy
- Physics and dose calculation
- Image-guided brachytherapy
- Dosimetric uncertainties
- Clinical radiobiology in brachytherapy: general principles and practical examples
- Radioprotection and afterloaders
- Optimisation of stepping source brachytherapy
- Permanent seed and HDR prostate implants
- Radiobiology of permanent implants
- Intervital brachytherapy
- Place of intracavitary brachytherapy in cervix, endometrium and vaginal cancer
- Place of endoluminal brachytherapy in cervix, endometrium and vaginal cancer
- Place of endoluminal brachytherapy in oesophageal and bronchus carcinoma
- Brachytherapy for bladder cancer
- Recommendations for recording and reporting in interstitial, intracavitary and endoluminal brachytherapy
- Emerging sources
- Practical examples of interstitial, intracavitary, and endoluminal brachytherapy for clinicians
- Practical exercises and interactive sessions for physicists.

PREREQUISITES
Before commencing this course participants should be trained or in training as a medical doctor, medical physicist or technologist in the field of brachytherapy.

FACULTY
Course directors
Erik van Limbergen, Radiation Oncologist, UZ Gasthuisberg, Leuven (BE)
Bradley Pieters, Radiation Oncologist, Academic Medical Centre, Amsterdam (NL)

Teachers
Dimos Baltas, Medical Physicist, University of Freiburg, Freiburg (DE)
Peter Hoskin, Radiation Oncologist, Mount Vernon Hospital, London (UK)
Renaud Mazeron, Radiation Oncologist, Institut Gustave Roussy, Villejuif (FR)

Local organisers
Lorenzo Livi, Radiation Oncologist, University of Florence, Florence
Isacco Desideri, Radiation Oncologist, University of Florence, Florence

ACCRREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

TEACHING METHODS
- 21 hours of lectures
- 5 hours of case discussions.

This course consists of didactic lectures, with interactive sessions on physics and clinical aspects and examples.

METHODS OF ASSESSMENT
- Evaluation form
- MCQ

KEY WORDS
Brachytherapy, basic course, clinical aspects, modern implantation techniques, physics.

FURTHER READING
Please consult the ESTRO website page of this course for further information.
PARTICLE THERAPY
14 - 18 March 2016
Kracow, Poland

TARGET GROUP
The course is aimed at radiation oncologists, radiation physicists and professionals in allied fields, including trainees interested in particle therapy. Basic knowledge of radiation oncology and radiation physics are prerequisites. The course targets individuals who are either directly involved in a clinical particle therapy project, already practice particle therapy, or who desire to update their knowledge about particle therapy.

COURSE AIM
- To provide a detailed overview of the clinical rationale and indications of particle therapy and the status of supporting medical evidence including status of clinical trials.
- To understand the distinguishing features of particle therapy compared to other radiotherapy modalities.
- To deepen knowledge of physical, biological, and technical aspects of particle therapy implementation in clinical practice.
- To study particle treatment systems, dosimetry, treatment delivery, treatment planning and to update about latest technological developments in particle therapy.
- To share challenges of particle centre projects in different health care environments.

LEARNING OUTCOMES
By the end of this course participants should be able to:
- Understand the radiobiological and physical basis and clinical rationale for particle therapy.
- Have a basic understanding of accelerator technology, present equipment as well as the practical complexities of building a particle centre.
- Understand the differences between active and passive beam delivery technology, and details of treatment planning, specifically of intensity modulated therapy and motion management.
- Know the clinical rationale for proton and carbon ion therapy, know the present indications and clinical practice according to various disease site.
- Know the current clinical evidence for particle therapy, and the status of clinical trials.
- Have a general understanding of the integration of particle therapy in general radiation oncology.
- Summarise the latest technical developments.
- Have knowledge of future directions in research and development of particle therapy.

COURSE CONTENT
- Physical aspects of particle therapy.
- Ion source accelerator, beam line and beam delivery technology.
- Biological aspects of particle therapy.
- RBE determination, biophysical modelling plan optimisation.
- Beam delivery: passive and active techniques.

Physics: image guidance techniques, dosimetry and quality assurance.
- Imaging for treatment planning.
- Treatment planning for proton and carbon ion therapy.
- Plan evaluation, robustness, quality assurance.
- Intensity-modulated particle therapy, image-guided particle therapy, dose-painting, LET-painting.
- Physical and technical approaches to the treatment of moving organs.

Clinical indications, anti-cancer effects, toxicity, challenges and limitations of particle therapy.
- Clinical challenges and pitfalls of proton and carbon ion therapy.
- Current clinical indications and applications for proton and carbon ion therapy according to pathological and anatomical disease characteristics.
- Review of the literature, clinical case reviews and discussions, review of clinical trials.
- New trends in radiation oncology and integration of particle therapy.
- Future clinical directions and developments.

Roadmap for a particle therapy project
- How to build a new particle therapy facility – from project planning to starting clinical operation.
- New technologies for hospital based particle centres.
- Protocol and journal club about latest clinical and physics developments.
- Guided tour of facility.

PREREQUISITES
Before commencing this course participants should:
- Have a basic understanding of radiobiology and radiation physics.
- Know the basics of radiotherapy and radiotherapy planning.
- Have a general understanding about the evaluation of medical evidence.

FACULTY
Course directors
Oliver Jackel, Physicist, German Cancer Research Centre (DKFZ) and Heidelberg Ion Beam Therapy Center, Heidelberg (DE)
Wilfried De Neve, Radiation Oncologist, Ghent University Hospital, Ghent (BE)

Teachers
Stephanie Combs, Radiation Oncologist, Technical University Munich, Munich (DE)
Pierpaolo Fossati, Radiation Oncologist, Centro Nazionale di Adroterapia Oncologica (CNAO), Pavia (IT)
Jean-Louis Habrand, Radiation Oncologist, Centre Français Baseline, Caen (FR)
Eugen Hug, Radiation Oncologist, Medical Director of ProCure Proton Therapy Centres, New Jersey (USA)
Marco Krenghl, Radiation Oncologist, Centro Nazionale di Adroterapia Oncologica (CNAO), Pavia (IT)

Anthony Lomax, Physicist, Paul Scherrer Institute, Villigen (CH)
Alejandro Maral, Physicist, Institut CurieProton Therapy Centre (CPO), Orsay (FR)
Peter Peschke, Biologist, German Cancer Research Centre (DKFZ), Heidelberg (DE)
Marco Schippers, Physicist, Paul Scherrer Institute, Villigen (CH)

Local organiser
Pawel Olko, Physicist, Institute of Nuclear Physics, Polish Academy of Sciences, Krakow

TEACHING METHODS
- 4 hours of tutorials / Journal club.
- 6 hours practical of case reviews and discussions.
- 4 hours tour of the proton facility.

METHODS OF ASSESSMENT
- MCQ.
- Evaluation form.

KEY WORDS
Particle therapy, proton therapy, carbon ion therapy, radiotherapy.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.
IMRT AND OTHER CONFORMAL TECHNIQUES IN PRACTICE

3 - 7 April 2016
London, UK

TARGET GROUP
The course is aimed at radiation oncologists, radiation physicists and radiation therapists (RTTs) involved in the implementation and clinical use of advanced techniques in their department. Basic knowledge of radiation oncology and radiation physics is a prerequisite, some experience in CT-based treatment planning is highly beneficial. The registrants will preferably be ‘graduates’ of the ESTRO course on ‘Physics for Modern Radiotherapy’ or an equivalent training in radiation physics. Simultaneous participation of a physicist and/or a clinician and/or a radiation therapist from the same institute is encouraged.

COURSE AIM
To present and discuss:
- The latest developments in IMRT irradiation modalities
- The relation between IMRT and other advanced radiotherapy techniques (e.g. IGRT and adaptive therapy).

LEARNING OUTCOMES
By the end of this course participants should be able to:
- Describe, at least in qualitative terms, the inverse treatment planning process and potential issues with all elements involved
- List specific contouring requirements for IMRT and, in particular for a clinician, assess the extent to which these requirements are fulfilled in their clinical practice
- Judge/revise the appropriateness of the dose-volume-constraints used in their clinical practice with respect to the current state-of-the-art
- Analyse/judge treatment plans with regard to applicability, safety and efficacy
- Evaluate their dosimetry practice with respect to the current standard of practice (specifically for physicists)
- Reassess their procedure in producing highly conformal treatment plans (specifically for a dosimetrist)
- Summarise the overall clinical outcomes and remaining open issues with highly conformal techniques across disease types.

COURSE CONTENT
- Rationale of 3DCRT/IMRT
- Delivery modalities
- Dosimetry and commissioning
- Quality assurance
- Imaging and contouring
- Treatment plan optimisation
- Normal tissue tolerance, dose-volume constraints
- Impact of motion and geometrical uncertainties
- Impact of motion and geometrical uncertainties on IMRT
- Clinical case discussions
- IGRT and IMRT
- Adaptive therapy and IMRT
- Volumetric IMRT techniques.

Practical demonstrations on-site in close collaboration with the manufacturers of equipment for planning, delivery and QA of IMRT and conformal RT. Their practical demonstrations will be an important part of the course.

PREREQUISITES
Before commencing this course participants should:
- Be a physician:
  - Have a general knowledge of dose calculation algorithms and 3D-treatment planning.
  - As a physicist:
  - Be familiar with quality assurance measurements for conventional therapy
  - Have a general knowledge of dose calculation
  - Reassess their dosimetry practice with respect to the current state-of-the-art

FACULTY
- Course director
  Marco Schwarz, Physicist, Proton Therapy Centre, Trento (IT)

- Co-chair
  Frank Lohr, Radiation Oncologist, University Medical Centre, Mannheim (DE)
  Andrea Riccardo Filippi, Radiation Oncologist, AOU Città della Salute e della Scienza, Turin (IT)
  Giovanna Gagliardi, Physicist, Karolinska University Hospital, Stockholm (SE)
  Matthias Sohn, Physicist, LMU University Hospital, Munich (DE)
  Koen Tourmel, Physicist, UZ Brussels (VUB), Brussels (BE)

- Local organiser
  Derek D’Souza, Physicist, University College London Hospitals (UCLH)

METHODS OF ASSESSMENT
- MCQ
- Clinical case discussion
- Evaluation form
- Practical demonstrations.

KEY WORDS
IMRT, IGRT, target definition, tolerance doses, inverse treatment planning, dose calculation, recent IMRT developments.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

Application for CPD recognition is submitted to the European Federation of Organisations for Medical Physics (EFOMP), as a CPD event for medical physicists. Information on the status of the applications can be obtained from the ESTRO office.
TARGET GROUP
The course is aimed at radiation and gynaecological oncologists, medical physicists and radiation therapists (RTTs) involved in cervix cancer treatment, interested in the implementation of advanced concepts and techniques. A basic knowledge of gynaecological oncology is required.

COURSE AIM
- To provide a comprehensive overview on external irradiation and brachytherapy in cervix cancer
- To provide an overview on traditional approaches in brachytherapy and external irradiation
- To learn about new methods of cervix cancer brachytherapy and adaptive image-guided cervix cancer treatment with ICRU-88 recommendations
- To introduce state-of-the-art treatment planning for cervix cancer, empirical and evidence-based clinical practice
- To enable practical implementation of advanced concepts and techniques in cervix cancer external irradiation and brachytherapy.

LEARNING OUTCOMES
By the end of this course participants should be able to:
- Understand rationale for contouring GTV, CTV and PTV in advanced treatment planning for EBRT
- Understand the rationale and concepts of advanced brachytherapy and treatment planning in clinical practice
- Understand dose volume and time relations for GTV and CTV based on clinical effect evaluation
- Understand dose volume relations for OARs for limited and intermediate size and large volumes
- Adopt, refine and implement advanced radiation techniques in cervix cancer
- Promote collaborative research and participate in ongoing research studies in cervix cancer.

COURSE CONTENT
- Normal and pathological anatomy of female pelvis
- Initial GTV, CTV-T/ITV-T/PTV-T and nodal CTV-E/PTV-E for external irradiation
- GTV at diagnosis and residual GTV and grey zones at time of brachytherapy
- HR CTV-T and IR-CTV-T for brachytherapy
- Combination of external irradiation and brachytherapy
- Different application techniques in brachytherapy, including intracavitary and interstitial techniques
- Image requirements for irradiation
- Image-based dose volume assessment applying DVH parameters (ICRU 88/GEC-ESTRO)
- Dose volume constraints for GTVs, CTVs and organs at risk
- Dose, dose-rate and fractionation and overall treatment time
- HDR, PDR, and LDR equivalencies
- Radiobiological effects from combined external irradiation and brachytherapy, linear quadratic model
- Planning aims, prescribing, recording and reporting according to ICRU Report 83, 88 and GEC-ESTRO recommendations I-IV
- Clinical Evidence: mono-institutional and multi-center evidence (e.g. EMBRACE study, RetrOEMBRACE, EMBRACE II design, STIC trial)
- Therapeutic outcome: radiochemotherapy, EBRT and image-guided adaptive brachytherapy
- Principles and practice of evidence-based medicine in cervix cancer radio-oncology
- Delineation examples in brachytherapy and EBRT
- Treatment planning workshops

TEACHING METHODS
- Lectures: 14 hours
- Tutorials: 1 hour
- Practical workshop: 3 hours
- Case discussion: 2 hours
- Videos: 2 hours (during lunch breaks).

METHODS OF ASSESSMENT
- MCQ
- Contouring exercise
- Evaluation form.

KEY WORDS
Advanced external beam cervix cancer radiotherapy, image-guided adaptive brachytherapy in cervix cancer, contouring guidelines for external beam and brachytherapy, dose volume and time constraints, advanced treatment planning, implementation of advanced technology.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office. Application will be submitted to the Royal College of Physicians and Surgeons of Canada.
TARGET VOLUME DETERMINATION - FROM IMAGING TO MARGINS

10 - 13 April 2016
Barcelona, Spain

TARGET GROUP
The course is aimed at trainees in radiation oncology and radiotherapy physics with at least one year’s experience, diagnostic radiologists with an interest in cancer imaging, radiation technologists with special interest in planning. However, any senior who would like to refresh part of her/his knowledge would benefit from this course.

COURSE AIM
• To understand the principles of different imaging modalities utilised for target volume definition (TVD) such as ultrasound, computed tomography (CT), magnetic resonance imaging (MRI), positron emission tomography (PET)
• To understand the need for TVD and planning nomenclatures for primary tumour, nodal regions and organs-at-risk in treatment planning and for treatment strategies such as IMRT and image guidance (IGRT)
• To appreciate the limitations of current imaging modalities for TVD and review “state-of-the-art” imaging modalities for TVD
• To explore the use of functional and molecular imaging in TVD for biological targets
• To review the diagnostic imaging and therapy interface for image registration and verification as well as margin determination.

LEARNING OUTCOMES
By the end of this course participants should be able to:
• Understand the optimal imaging requirements for treatment planning of a large variety of tumours
• Have sufficient knowledge to determine adequate “margins”
• Have sufficient expertise to initiate an IGRT protocol
• Apply anatomical knowledge in daily clinical practice.

COURSE CONTENT
• Imaging techniques for GTV/CTV including ultrasound, CT, MRI and PET
• Functional and molecular imaging in oncology
• Optimal imaging guidelines in selected tumour sites
• Target volume and margin definitions and determination including inter-observer variations
• Acquisition of imaging data for treatment planning
• Image handling, image fusion and networking
• Target volumes for CNS tumours
• GTV to PTV for head and neck tumours
• Target volumes for breast nodal regions
• Planning volumes for lung cancer including planning with PET/CT
• GTV to PTV for pelvic tumours and pelvic nodes including urological, gynaecological and gastrointestinal tumours
• Geometric uncertainties in conformal radiotherapy and IMRT
• Image registration for conformal therapy, IMRT and IGRT
• Practical collaborative group exercises
• Interactive plenary sessions for case solutions.

PREREQUISITES
Before commencing this course participants should have:
• Basic knowledge on ICRU
• Access to CT-guided planning.

FACULTY
Course director
Gert de Meerleer, Radiation Oncologist, Ghent University Hospital, Ghent (BE)

Teachers
Martina Kunze-Busch, Physicist, UMC St Radboud, Nijmegen (NL)

Daryl Lim Joon, Radiation Oncologist, Austin Health & Repatriation Medical Centre, Melbourne (AU)
Indira Madani, Radiation Oncologist, Ghent University Hospital, Ghent (BE)
Peter Remeijer, Physicist, The Netherlands Cancer Institute, Amsterdam (NL)
Esther Troost, Radiation Oncologist, MAASTRO, Maastricht (NL)

The complete list of faculty members can be found on the ESTRO website.

Local organiser
Angeles Rovirosa, Radiation Oncologist, Hospital Clinic Barcelona

TEACHING METHODS
• 20 hours of lectures
• 4 hours of practical workshops
• 4 hours of case discussions
• Audience participation via remote voting.

METHODS OF ASSESSMENT
• Delineation exercise
• Evaluation form.

KEY WORDS
Anatomy, modal spread, margins, imaging, IGRT.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

This course is using the FALCON platform (Fellowship in Anatomic deLineation and CONtouring) for the contouring exercises.
**TARGET GROUP**
The course is aimed at senior residents or young specialists in radiation oncology, nuclear medicine or radiology, who intend to expand their knowledge and skills in the use of molecular imaging methods for radiation oncology.

**COURSE AIM**
The applications of molecular imaging (MI) for treatment selection, target definition and response evaluation in radiation oncology are increasing. This advanced course, jointly organised by ESTRO and ESNM (European School of Nuclear Medicine), aims at providing the participants with profound knowledge and skills to deal with new challenges in the use of MI methods in all fields of radiation oncology.

**LEARNING OUTCOMES**
By the end of this course participants should be able to:
- List the implications of PET and some MRI based MI methods in radiation oncology
- Understand technical issues of PET in radiotherapy treatment planning
- Understand technical issues of functional MRI in radiotherapy treatment planning
- Have knowledge of the current evidence of PET in staging, treatment planning and response assessment in main solid tumours
- Discuss GTV delineation procedures based on MI
- Discuss nodal CTV concepts with the background of diagnostic data
- Take home some points of necessary research in this field.

**COURSE CONTENT**
The course will be interactive with talks and hands-on group sessions on MI based GTV delineation, the discussion of MI based CTV concepts, as well as the use of MI methods for staging and response assessment in several tumour types. The MI methods addressed will mainly be nuclear medicine based (e.g. PET) but MRI-based methods will also be touched.

**PREREQUISITES**
Before commencing this course participants should have acquired:
- Basic knowledge on radiation oncology
- Some basic knowledge on anatomical (CT, MRI) imaging in radiation oncology.

To participate in the hands-on delineation sessions you should bring a laptop that can run the online FALCON platform (it is strongly suggested to confirm this functionality at home).

**FACULTY**

**Course directors**
- Ursula Nestle, Radiation Oncologist, Freiburg University, Freiburg (DE)
- Wouter Vogel, Nuclear Medicine Physician, The Netherlands Cancer Institute, Amsterdam (NL)

**Teachers**
- Vicky Goh, Radiologist, St. Thomas Hospital, London (UK)
- Anne Laprie, Radiation Oncologist, Claudius Regaud Institute, Toulouse (FR)
- Heikki Minn, Radiation Oncologist, University Hospital, Turku (FI)
- Frank Pameijer, Radiologist, UMC Utrecht, Utrecht (NL)
- Maria Picchio, Nuclear Medicine Physician, San Raffaele Scientific Institution, Milan (IT)
- Daniela Thorwarth, Physicist, Tübingen University Hospital, Tübingen (DE)
- Uuieke van de Heide, Physicist, The Netherlands Cancer Institute, Amsterdam (NL)

**ACCREDITATION**
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

**METHODS OF ASSESSMENT**
- Theoretical knowledge and the ability to communicate the impact of imaging on target definition will be evaluated during group discussions
- Practical capabilities in target definition based on MI will be evaluated during the hands-on workshops using direct feedback on contours generated by experts and by course participants
- The course will be evaluated using standard ESTRO evaluation forms.

**KEY WORDS**
Molecular imaging, radiotherapy, PET, molecular MRI, treatment planning, dose painting, response assessment.

**FURTHER READING**
Please consult the ESTRO website page of this course for further information.

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**ESTRO SCHOOL ON MOLECULAR IMAGING AND RADIATION ONCOLOGY**

19 - 22 May 2016
Lisbon, Portugal
MULTIDISCIPLINARY MANAGEMENT OF BREAST CANCER

20 - 22 May 2016
Tokyo, Japan

TARGET GROUP
The course is primarily intended for specialists and trainees in the field of radiation and clinical oncology who are interested in extending their knowledge of the management of breast cancer. Other specialists active in the field of breast cancer and interested in an updated view of the possibilities of modern radiation oncology are very much invited to participate as well.

BACKGROUND
Breast cancer is a very common cancer and its treatment involves several different health care professionals. In the last decades, we have first seen a change in the attitude towards the treatment as data on the effectiveness of systemic treatment outcome, followed by a new shift towards optimising the use of loco-regional treatments, in view of the long-term follow-up data of the EBCTCG that clearly demonstrate positive interaction between both systemic and loco-regional treatments. The challenge to integrate all treatments for every single patient appeals for an optimal cooperation between all specialists involved in the care of breast cancer. Against this background, radiation and clinical oncologists continue further fine-tuning the technical aspects of the delivery of radiation therapy, starting from optimal target volume definition. This underlines the importance of optimal collaboration with imaging specialists, surgeons and pathologists.

COURSE AIM
This multidisciplinary course aims at promoting an integrated approach to the management of breast cancer. The goal is to individualise the treatment based on the clinical presentation, its prognostic (tumour) factors and patient-related issues.

LEARNING OUTCOMES
By the end of this course participants should be able to:
- Understand the clinical and biological aspects of the natural behaviour of breast cancer
- Have a firm knowledge of the different prognostic factors and tumour types
- Interpret the literature on the results of multimodal treatments for breast cancer
- Discuss with (multidisciplinary) colleagues the balance between possible benefits and side effects of the various treatment options for breast cancer, depending on prognostic factors and patient-related characteristics
- Apply the guidelines for volume delineation of all target volumes for breast cancer
- Know how to select and use the possible technical solutions for optimal radiation therapy for breast cancer
- Recognise the fields of uncertainty and where further research is required.

COURSE CONTENT
- Epidemiology: lessons from the past
- The clinically relevant aspects of the biology of breast cancer
- Primary surgery: choices and techniques (including oncoplastic)
- Axillary surgery including limitations of the SN concept
- Modern radiation therapy techniques from treatment planning to image guidance
- Fractionation schedules
- Systemic treatment: interactions with radiotherapy, primary versus adjuvant
- Treatment of DCIS
- Treatment possibilities for locally advanced disease
- Summary on accelerated partial breast irradiation
- Role of advanced treatment techniques including IMRT and breathing control
- Lessons from meta-analyses of clinical trials
- Cosmetic outcome after BCT
- Long-term side-effects
- Reconstructive surgery
- How to use adjuvantonline, IBTR and IBR?
- Current clinical trials
- Target volume delineation including homework and workshops
- Patient management workshops.

PREREQUISITES
Before commencing this course participants should:
- Have at least basic experience with all aspect of radiation therapy for breast cancer patients. If you are not a radiation/clinical oncologist (in training) you should be involved in the interdisciplinary and/or multidisciplinary case discussions and work related to treating breast cancer patients
- Read through the short selection of the literature (“essential reading”) that will be sent early 2016, after your registration
- Have completed an exercise beforehand on target volume delineation in breast cancer.

FACULTY
Course director
Philip Poortmans, Radiation Oncologist, Radboud University Medical Center, Nijmegen (NL)

Teachers
Marianne Aznaar, Physicist, The Finsen Centre – Rigshospitalet, Copenhagen (DK)
Liesbeth Boersma, Radiation Oncologist, MAASTRO Clinic, Maastricht (NL)
Sarah Darby, Epidemiologist, CTSU, Oxford (UK)
Youlia Kirova, Radiation Oncologist, Institut Curie, Paris (FR)
Thorsten Kühn, Gynaecologist, Breast Cancer Klinik Erlangen, Erlangen (DE)
Birgitte Offersen, Radiation Oncologist, Aarhus University Hospital, Aarhus (DK)
Birgit Vriens, Medical Oncologist, Catharina Hospital, Eindhoven (NL)
Lynda Wyld, Surgeon, Sheffield University, Sheffield (UK)

Contouring administrator
Sandra Hol, Radiation Therapist (RTT), Institute Verbeeten, Tilburg (NL)

Local organisers
Nobue Uchida, Radiation Oncologist, Tottori Prefectural Central Hospital, Tottori City
Satoshi Ishikura, Radiation Oncologist, Koshigaya Municipal Hospital, Koshigaya

TEACHING METHODS
- Lectures
- Practical workshops
- Case discussions

The course will be very interactive through the integration of lectures, target volume delineation, guidance in treatment planning and patient management workshops. Focused on multidisciplinarity, the programme will outline the different treatments for breast cancer from evidence based medicine to ongoing research.

METHODS OF ASSESSMENT
- MCQ
- Contouring exercise
- Evaluation form.

KEY WORDS
Breast cancer, radiation therapy, multidisciplinarity, breast conserving therapy, APBI, clinical trials, volume delineation, side effects, quality of life.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

This course is using the FALCON platform (Fellowship in Anatomic DeLineation & CONtouring) for the contouring exercises.
MULTIDISCIPLINARY MANAGEMENT OF PROSTATE CANCER
22 - 26 May 2016
Istanbul, Turkey

TARGET GROUP
The course is aimed at radiation oncologists, urologists, medical oncologists and other specialists and trainees who have a special interest in prostate cancer and are willing to update their knowledge.

COURSE AIM
This 5-day teaching course aims at focusing on the management of localised, locally advanced and metastatic prostate cancer. It emphasises the importance of a multidisciplinary approach and of teamwork, where full information exchange is vital to provide the best up-to-date scientific evidence on which the management of the disease will be based. This will be illustrated during state-of-the-art lectures presented by experts in the field, covering important issues such as biology, imaging, pathology, therapy and future developments. Interactive case studies and journal clubs will be integrated on a daily basis and there will be ample time for open discussions amongst participants and experts. A special session on target delineation for radiotherapists will also be organised during the course.

LEARNING OUTCOMES
- To provide an in-depth overview of the epidemiology, pathology, imaging and treatment options for low, intermediate and high risk prostate cancer
- To discuss patient selection/indications and contraindications for the various treatment options
- To provide a critical overview of the surgical and radiotherapy techniques available for the management of prostate cancer
- To discuss the new drugs currently available for the management of the advanced and metastatic stages of the disease
- To debate on the most recent developments relevant to prostate cancer management.

COURSE CONTENT
Sunday 22 May 2016
- Normal prostate: anatomy – embryology, histology
- Prostate cancer: epidemiology and prevention, clinical diagnosis, imaging modalities pathology, staging
- Case discussions.

Monday 23 May 2016
- Low risk prostate cancer: active surveillance, surgery and the postop pathology
- Radiotherapy and brachytherapy, the pathology after irradiation
- External beam RT: on-line control, target delineation
- Case discussions.

Tuesday 24 May 2016
- High risk prostate cancer: RT and hormones, alternative RT regimens
- Toxicity of RT: acute and late morbidity – erectile dysfunction
- Role of surgery and its morbidity
- Alternative treatments
- Case discussions and Journal Club.

Wednesday 25 May 2016
- Adjuvant and salvage radiotherapy after radical surgery
- Rising PSA after surgery and after RT
- Imaging for recurrent detection
- Node positive prostate cancer
- Case discussions and Journal Club.

Thursday 26 May 2016
- Metastatic prostate cancer: hormones and their complications
- Castration resistant prostate cancer: new drugs
- Palliative radiotherapy and surgery
- Non systemic treatment in the metastatic setting.

PREREQUISITES
Before commencing this course participants should:
- Revise the general principles of prostate cancer epidemiology, pathology, diagnosis and staging
- Read the published ESTRO and ASTRO guidelines on prostate contouring and the EAU (European Association of Urology) guidelines on prostate cancer
- Complete the FALCON* exercise which is distributed prior to the course.

FACULTY
Course director
Alberto Boos, Radiation Oncologist, Institut Gustave Roussy, Villejuif (FR)
Co-chair
Alberto Briganti, Urologist, Università Vita-Salute San Raffaele, Milan, Italy (IT)

Teachers
Ferran Alsaba, Pathologist, Autonomous University of Barcelona, Barcelona (ES)
Valerie Fonteyne, Radiotherapist, Ghent University Hospital, Ghent (BE)
Nicolas Mottet, Urologist, University Hospital, Hospital Nord, Saint-Etienne (FR)
Marco van Vulpen, Radiation Oncologist, UMC Utrecht, Utrecht (NL)
Geert Vlieckx, Radiologist, Ghent University Hospital, Ghent (BE)
Jochen Walz, Urologist, Institut Paoli-Calmettes, Marseille (FR)

Delineation Administrator
Carl Salembier, Radiation Oncologist, Europe Hospitals - Site St Elisabeth, Brussels (BE)

Local organiser
Sedat Turkan, Radiation Oncologist, Cerrahpasa Medical School, Istanbul

PREREQUISITES
- Read the published ESTRO and ASTRO guidelines on prostate contouring and the EAU (European Association of Urology) guidelines on prostate cancer.
- Complete the FALCON* exercise which is distributed prior to the course.

METHODS OF ASSESSMENT
- MCQ
- Delineation exercise
- Evaluation form.

KEY WORDS
Prostate cancer management, surgery, radiotherapy.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.
LOWER GI: TECHNICAL AND CLINICAL CHALLENGES FOR RADIATION ONCOLOGISTS

25 - 27 May 2016
Brussels, Belgium

TARGET GROUP
Mainly radiation oncologists, physicists, radiation therapists and researchers in the field of radiation oncology/biology who seek to improve and deepen their knowledge and practical skills in the treatment of lower gastro-intestinal malignancies (anal, rectal cancer).

COURSE AIM
The aim of the course is to provide an interactive educational set-up to learn, understand and possibly improve the major steps of radiation therapy practice for anal and rectal cancer, including planning, delivering and monitoring radiation therapy by use of modern radiation technologies and techniques (SMRT, IGRT). In a truly interactive atmosphere, you will be able to identify the major uncertainties of daily practice and learn how to handle them. Participants will also learn how radiation therapy for anal and rectal cancer is best combined with chemotherapy and (possibly) molecularly targeted agents. The most relevant ongoing questions in multidisciplinary management of rectal cancer, including aspects of modern imaging and innovative surgical approaches, will be addressed.

LEARNING OUTCOMES
By the end of this course participants should be able to:
• Understand and justify indications for radiation therapy in different clinical scenarios
• Integrate modern imaging into radiotherapy treatment planning and delivery
• Tailor target volume delineation according to tumour location and stage
• Optimise dose distribution and compare different RT techniques
• Assess the usefulness of available IGRT technologies
• Monitor tumour response and discuss possible clinical consequences
• Understand and exploit the interactions between radiation therapy and concurrent systemic treatment
• Improve radiation (and concurrent systemic treatment) delivery by optimised supportive care.

COURSE CONTENT
Experts in the field will provide short lectures, interactive case discussions, small teaching groups on all technical aspects of radiotherapy planning and delivery, and open debates on controversial issues in multidisciplinary care. This will include state-of-the-art teaching of pivotal clinical trials on anal and rectal cancer treatment and explanation of the background of current guidelines. This course will then have a particular focus on how to improve radiation therapy delivery, all the way down from initial patient set-up, treatment planning, delineation of target volumes, optimisation of dose distribution, image-guided monitoring of radiation delivery, and assessment of tumour response.

PREREQUISITES
Before commencing this course, participants should:
• Have studied the pivotal clinical trials that have established the role of radiation therapy and combined modality treatment approaches for anal and rectal cancer
• Be familiar with standard procedures of radiation therapy planning and delivery
• Be aware of open questions and ongoing controversies in the multidisciplinary care of both tumour entities.

FACULTY
Course director
Claus Rödel, Radiation Oncologist, Johann Wolfgang Goethe University, Frankfurt (DE)

Teachers
Karin Haustermans, Radiation Oncologist, University Hospital Gasthuisberg, Leuven (BE)
Corrie A.M. Marijnen, Radiation Oncologist, Leiden University Medical Center, Leiden (NL)

Rest of the Faculty to be confirmed.

Contouring Administrator
Maria Antonietta Gambacorta, Radiation Oncologist, Università Cattolica S. Cuore, Rome (IT)

TEACHING METHODS
Lectures, interactive case discussions, small teaching groups on all technical aspects of RT planning and delivery, open debates on multidisciplinary care.

METHODS OF ASSESSMENT
• Survey Monkey based evaluation form
• Small working groups with experts
• Turning Point questionnaires.

KEY WORDS
Rectal cancer, anal cancer, technical aspects of radiation treatment planning and delivery, concurrent systemic treatment, multidisciplinary care.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

This course is using the FALCON platform (Fellowship in Anatomic deLineation & CONtouring) for the contouring exercises.
TARGET GROUP
The target group consists of radiation oncologists, physicists and radiation therapists who are interested to learn and improve their knowledge on optimal radiation oncology treatment modalities in upper GI malignancies taking care of the main radiotherapy steps as: indication, prescription, delineation, planning, IGRT and outcome evaluation.

COURSE AIM
The improvement of technology opportunities in radiation oncology challenges the role of radiotherapy in many tumour sites. Upper GI tumours share a very unfavourable prognosis and in the meantime they could, by large extent, benefit from technology innovation.

The aim of the course is to support an interactive educational environment by peer review of each step of radiation therapy practice (indication, prescription, delineation, planning, IGRT, outcome evaluation) according to the modern available technologies and knowledge and taking care of the clinician, physicist and RTT perspectives.

Specialists of different disciplines will support the radiation oncology audience in understanding the clinical needs, anatomic and pathologic details, and the therapeutic achievements needed to exploit the radiation technology at the best.

LEARNING OUTCOMES
By the end of this course, for each upper GI tumour site, participants should be able to practice:
- Proper indication for radiation therapy in a multidisciplinary perspective
- Prescription
- Tailored delineation according to tumour location and stage
- Dose distribution optimisation and comparison
- Optimal use of available IGRT technologies
- Proper monitoring of tumour response as control.

COURSE CONTENT
Session 1: Prescription
Participants will be invited to make their prescription on cases, that will be afterward delineated and planned in the following sessions, by a monkey questionnaire. Lectures on imaging based staging and state of art of treatment will help the final discussion.

Session 2: Delineation (Falcon session)
The previously discussed cases will be available for a tutored small working group delineation exercise. A video on surgical procedure highlighting the key surgical steps to better understand local anatomy will be commented by a surgeon.

Session 3: Delineation
Lectures on primary tumour extension and nodal subsite involvement based on pathology evaluation and modern imaging will support the final recommendation for subsite delineation by stage and tumour position for the delineated cases.

Session 4: In room imaging guided radiotherapy
The choice among competitive plans for the cases by interactive systems will be supported by lectures on dose issues for tumour control and constrains for organ at risk.

Session 5: Planning
Drill and practice exercise in small working groups on how to determine PTV margin, and IGRT by portal imaging and CT cone beam will favor discussion on the daily dose delivery issues.

Session 6: What we learn by failure analysis and future perspective
The challenge of tumour recurrence will be addressed by lectures on how to distinguish primary recurrence vs nodal recurrence by imaging, on incidence and location of local recurrences and on the new treatment perspectives.

PREREQUISITES
Before commencing this course, participants should have practiced upper GI cancer:
- Tumour board discussion
- Delineation
- Planning optimisation and comparison
- IGRT
- Outcome monitoring.

FACULTY
Course director
Vincenzo Valentini, Radiation Oncologist, Università Cattolica S. Cuore, Rome (IT)

Teachers
A team of Radiation Oncologists, a Physicist, a RTT, a Radiologist, a Surgeon and a Pathologist.

Contouring Administrator
Francesco Cellini, Radiation Oncologist, Università Cattolica S.Cuore, Rome (IT)

METHODS OF ASSESSMENT
- On site monkey survey
- Small working groups with experts
- Questionnaires.

KEY WORDS
Upper GI malignancies, oesophageal cancer, gastric cancer, pancreatic cancer, multidisciplinary management, delineation, planning, IGRT, outcome evaluation.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.
ADVANCED BRACHYTHERAPY PHYSICS

29 May - 1 June 2016
Vienna, Austria

TARGET GROUP
The course is primarily designed for medical physicists interested in extending their knowledge in the field of brachytherapy physics. A basic knowledge of the sub-speciality is required, as supported by (preferably) at least one year of experience in clinical practice, or participation in a previous relevant course (such as the Modern Brachytherapy Techniques teaching course). The course could also serve as a refresher or an interactive update on recent developments in the field of brachytherapy for senior medical physicists.

COURSE AIM
To review and extend the physics background of modern brachytherapy in terms of computational and experimental dosimetry and recent developments.

LEARNING OUTCOMES
By the end of this course participants should be able to:
- Define a QA program for 3D image based brachytherapy treatment planning
- Identify and understand the benefits and limitations of alternative 3D dose calculation algorithms
- Identify the benefits and limitations of using inverse optimisation and planning technology in specific disease sites

- Identify the need for, and implement, a verification process for specific brachytherapy treatment techniques
- Delineate the relative importance of different sources of uncertainty for specific brachytherapy applications.

COURSE CONTENT
This is a 3.5 day course organised to attain a high level of understanding of the physics background of brachytherapy delivery and its technical aspects. The following items will be covered:

Imaging in brachytherapy:
- Overview of 3D imaging modalities for brachytherapy
- Tissue segmentation and characterisation using 3D imaging
- Catheter/applicator and source localisation using 3D imaging
- Demands on QA of 3D imaging
- Practical session on 3D imaging based localisation methods.

Advanced 3D dose calculation:
- TG43: essentials and limitations
- Monte Carlo simulation technique
- Commercially available grid based Boltzmann equation solver algorithm
- Commercially available collapsed cone superposition algorithm
- Commissioning of 3D algorithms beyond TG43 in clinical practice
- Practical session on evaluating alternative 3D dose calculation algorithms.

Dose optimisation, evaluation, prescription and reporting:
- Optimisation and inverse planning
- Dose plan evaluation
- Prescription and reporting
- Practical session on optimisation and evaluation.

Verifications in brachytherapy:
- Source strength determination
- Experimental dosimetry in brachytherapy
- Treatment delivery verification
- In vivo dosimetry.

Accuracy and quality management:
- Risks and safety in brachytherapy
- Uncertainties in brachytherapy
- Quality management
- Failure mode and effect analysis.

Outlook to expected technological advancements.

PREREQUISITES
- An understanding of basic concepts and methods of image based treatment planning in brachytherapy
- A basic understanding of computational and experimental dosimetry methods in the brachytherapy energy regime
- Familiarisation with recommendations and guidelines for the most common brachytherapy applications (gynaecological, prostate, breast, head and neck).

FACULTY
Course director
Dimos Baltas, Physicist, University of Freiburg, Freiburg (DE)

Teachers
Luc Beaulieu, Physicist, Centre Hospitalier Universitaire de Québec, Quebec (CA)
Christian Kirisits, Physicist, Medical University Vienna, Vienna (AT)
Panagiotis Papagiannis, Physicist, University of Athens, Athens (GR)
Mark Rivard, Physicist, Tufts University School of Medicine, Boston (USA)

Guest lecturer
Nicole Nesvacić, Physicist, Medical University Vienna, Vienna (AT)

Local organiser
Nicole Nesvacić, Physicist, Medical University Vienna, Vienna

TEACHING METHODS
Lectures, open discussion, practical sessions (including hands on).

METHODS OF ASSESSMENT
Interaction during practical sessions, open discussion, self-assessment questionnaire (multiple choice and open ended questions).

KEY WORDS
Brachytherapy, imaging, segmentation, localisation, dosimetry, treatment planning, TG43, Monte Carlo, grid based Boltzmann equation solver, ACE, collapsed cone, commissioning, optimisation, inverse planning, dose prescription, dose reporting, verification, in vivo, QA, uncertainty, risk assessment.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CPD recognition is submitted to the European Federation of Organisations for Medical Physics (EFOMP), as a CPD event for medical physicists. Information on the status of the applications can be obtained from the ESTRO office.
BRACHYTHERAPY FOR PROSTATE CANCER
5 - 7 June 2016
Brussels, Belgium

TARGET GROUP
The course is aimed at all those who may be members of the prostate brachytherapy team and for those wishing to set up prostate brachytherapy unit i.e.: urologists, radiation oncologists, radiation therapists (RTTs) radiologists, physicists and nurse specialists.

COURSE AIM
• To provide an overview of the epidemiology and treatment options for localised prostate cancer
• To discuss patient selection/indications and contra-indications for brachytherapy
• To provide an overview of the techniques, equipment and staffing for prostate brachytherapy including the physics background and regulatory requirements
• To give an overview of the results, side effects and their management
• To discuss new developments relevant to brachytherapy in imaging, focal therapy and salvage.

LEARNING OUTCOMES
By the end of this course participants should be able to know the:
• Requirements for a successful brachytherapy programme
• Relevant patient groups for prostate brachytherapy and the literature reporting their outcome
• Current areas of development in focal and salvage prostate brachytherapy.

COURSE CONTENT
This course covers an overview on epidemiology and treatment options for localised prostate cancer and gives an adequate introduction to brachytherapy. Patient selection for both HDR and LDR seed implants will be discussed with treatment indications and contra-indications. A review of the equipment and staffing for brachytherapy is included in the programme for those yet to embark on this area of activity. Practical examples of gland evaluation types of treatment planning, different implant techniques and post implant planning are presented in the context of videos and interactive discussions between participants and the teaching staff. New approaches are discussed including salvage and focal therapy. Comparisons are presented between permanent (seed) and temporary (HDR) brachytherapy implants and between brachytherapy and other treatments available for prostate cancer.

PREREQUISITES
Before commencing this course participants should:
• Revise the general principles of prostate cancer pathology, diagnosis and staging
• Read the published GEC-ESTRO guidelines in LDR and HDR prostate brachytherapy
• Complete the FALCON* exercise which is distributed prior to the course.

FACULTY
Course director
Peter Hoskin, Radiation Oncologist, Mount Vernon Hospital, London (UK)

Teachers
Bashar Al Qaisieh, Clinical Physicist, Cookridge Hospital, Leeds (UK)
Jean-Marc Cossel, Radiation Oncologist, Institut Curie, Paris (FR)
Stefan Machtens, Urologist, Marien-Krankenhaus, Bergisch Gladbach (DE)
Carl Salember, Radiation Oncologist, Cliniques de l’Europe, Brussels (BE)
Frank-André Siebert, Physicist, Universitätsklinikum Schleswig-Holstein, Kiel (DE)

TEACHING METHODS
• 11 hours of lectures
• 1 hour of contouring
• 2 hours of practical workshops
• 3 hours of interactive discussions.

METHODS OF ASSESSMENT
• MCQ
• Delineation exercises
• Evaluation form.

KEY WORDS
Prostate brachytherapy, high dose rate, low dose rate, radioiodine, afterloading.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

* FALCON (Fellowship in Anatomic deLineation and CONtouring)

This course is using the FALCON platform (Fellowship in Anatomic deLineation and CONtouring) for the contouring exercises.
CLINICAL PRACTICE AND IMPLEMENTATION OF IMAGE-GUIDED STEREOTACTIC BODY RADIOTHERAPY

5 - 9 June 2016
Athens, Greece

TARGET GROUP
The course is aimed at all professionals in the field of radiation oncology, who are involved in the clinical practice of SBRT and cranial SRS at any point in the treatment chain: radiation oncologists, physicists and radiation therapists (RTTs) with a dedicated focus on SBRT and SRS. The course targets both individuals who are currently at the planning stage of establishing a clinical stereotactic programme, as well as individuals who already have a current stereotactic practice. The importance of integrating all professionals into a team will be highlighted.

COURSE AIM
- To learn about the historical background and development of cranial radiosurgery (SRS) and stereotactic body radiotherapy (SBRT)
- To understand the radiobiological consequences of hypo-fractionated, inhomogeneous dose distributions
- Cranial radiosurgery: to discuss the practice of frame-less image-guided versus frame-based stereotactic cranial radiosurgery
- To identify potential sources of uncertainties in the workflow of SBRT: imaging, target delineation, treatment planning, treatment delivery and treatment evaluation
- To offer an overview of available treatment planning and delivery technologies and how to integrate these in clinical practice of SBRT
- To compare available technologies and help define applicability for particular use.
- To give an evidence-based review on potential indications for SBRT: early stage NSCLC, primary and secondary liver metastases, prostate cancer, vertebral metastases, oligometastases, re-irradiation
- To give an overview of normal-tissue toxicity, tolerability and radiological changes in SBRT
- To learn how to establish and implement a safe and clinical programme for SBRT.

LEARNING OUTCOMES
By the end of this course participants should be able to:
- Build a team to implement and practice SRS, SBRT and SRT
- Understand the technical and physical requirements for SRS, SBRT and SRT
- Know the clinical rationale of SRS, SBRT and SRT and their limitations
- Understand the radiobiological basis of very high fraction doses
- Know the details of indication, practice and outcome of SBRT for early stage NSCLC
- Know the current clinical evidence for SRS, SRT and SBRT in the various clinical indications.

COURSE CONTENT
This five-day ESTRO teaching course will support establishment and further development of a clinical stereotactic programme. The following items will be covered with special focus on specific requirements for SBRT:
- Radiobiology of hypo-fractionated, inhomogeneous dose distributions for normal tissue and cancer cells
- Uncertainties in clinical practice of SBRT and SRS
- Technological means for compensation of these uncertainties at all stages of radiotherapy treatment
- Evidence-based clinical practice of SBRT and potential indications for SBRT
- Requirements for building and further development of a clinical stereotactic programme.

On Sunday, a historical background of stereotactic radiotherapy will be given followed by the radiobiological and technological background; different technological platforms will be demonstrated followed by a debate discussing the fast spread of stereotactic radiotherapy in our community. The teaching lectures on Monday will review and discuss the technology and physical practice of SBRT and SRS; on Tuesday, various clinical aspects will be discussed and SBRT for early stage NSCLC will be reviewed in detail. All teaching lectures will focus on the multi-disciplinary character of SBRT. Interaction and discussion between the professional groups is highly encouraged. Workshops will be organised on Tuesday and Wednesday, which will focus on different tumour sites: a practical approach to these indications will be demonstrated based on case presentations and discussions. The last day will focus on the establishment of a clinical stereotactic programme and close with a panel discussion.

PREREQUISITES
Before commencing this course participants should:
- Know the basics of image-guided radiotherapy
- Have experience and knowledge about advanced radiotherapy treatment planning
- Have a basic understanding of radiobiological modelling.

FACULTY
Course directors
Matthias Guckenberger, Radiation Oncologist, University Hospital Zurich, Switzerland (CH)
Dirk Verellen, Physicist, UZ Brussels (VUB), Brussels (BE)

Teachers
Karim Deuckmann, Radiation Oncologist, Medical University of Vienna, Vienna (AT)
Mischa S. Hoogeman, Physicist, Erasmus Medical Centre-Daniel den Hoed Cancer Centre, Rotterdam (NL)
Morten Hoye, Radiation Oncologist, Aarhus University Hospital, Aarhus (DK)
Coen Hurkmans, Physicist, Catharina Hospital, Eindhoven (NL)
Alejandra Méndez Romero, Radiation Oncologist, Erasmus Medical Centre-Daniel den Hoed Cancer Centre, Rotterdam (NL)

Please check the webpage of the course for updates

Local organiser
Kouloulias Vassilis, Radiation Oncologist, Attikon University Hospital, Athens

METHODS OF ASSESSMENT
- 19 hours of lectures
- 8 hours of practical workshops
- 1 hour of case discussions.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.
EVIDENCE BASED RADIATION ONCOLOGY
How to evaluate the scientific evidence and apply it to daily practice

12 - 17 June 2016
Porto, Portugal

TARGET GROUP
This course is aimed primarily at trainee radiation oncologists. It may also be of interest to radiation physicists and technologists who would like an overview of current clinical practice in the major treatment sites.

COURSE AIM
• The course focuses on the concept of evidence-based medicine and describes the methodology underlying clinical research. We will cover those areas of biomedical statistics necessary for participants to develop skills of critical reading and presentation of research evidence.
• The course will explore the state-of-the-art of radiation therapy in the major tumour sites: breast, oesophagus and stomach, rectum, head and neck, lung, CNS and gynaecological malignancies. There is also a separate session dealing with the major issues in palliative radiation therapy.
• The clinical component of the course will comprise a combination of lectures and case discussions. Participants will have the opportunity to discuss clinical scenarios in small groups before the management options are then discussed in the light of the research evidence in plenary sessions.

LEARNING OUTCOMES
By the end of this course participants should be able to:
• Define the hierarchy of evidence and use this to evaluate the basis of radiotherapy treatment protocols
• Identify areas of uncertainty in daily radiotherapy practice
• Describe the statistical basis for the design of clinical trials and critically appraise the published literature
• Identify those aspects of current radiotherapy practice which are supported by the highest levels of evidence and those which are not
• Outline the evidence supporting the use of altered fractionation regimens and combined-modality treatment
• Critically evaluate an oral or written scientific presentation.

COURSE CONTENT
• General introduction to evidence-based medicine
• The terminology of radiation therapy, errors and uncertainties in daily practice
• Statistics for the radiation oncologist, how to describe and interpret data from clinical trials and meta-analyses
• Prostate cancer
• Lung cancer
• Rectal cancer
• Head and neck cancer
• CNS malignancies
• Gynaecological malignancies
• Breast cancer
• Gastric and oesophageal cancer
• Radiation therapy in palliative care.

PREREQUISITES
Before commencing this course participants should:
• Review their institution’s radiotherapy treatment protocols in those areas covered by this course and be prepared to apply and discuss these in case discussions
• Try to distinguish those areas of their practice that can be justified by the available evidence from those where the evidence-basis is uncertain
• Be prepared to ask questions and contribute to discussions.

FACULTY
Course director
Chris Cottrill, Radiation Oncologist, St Bartholomew’s Hospital, London (UK)

Teachers
Bernard Dubray, Radiation Oncologist, Centre Henri Becquerel, Radiothérapie et Physique Médicale, Rouen (FR)
Johannes Kaanders, Radiation Oncologist, Radboud University Nijmegen Medical Centre, Nijmegen (NL)
Yvette van der Linden, Radiation Oncologist, Leiden University Medical Centre, Leiden (NL)

The rest of the faculty will be confirmed on a later date.

Local organiser
Lurdes Trigo, Radiation Oncologist, Portuguese Society of Radiotherapy Oncology, Porto

TEACHING METHODS
• 31 hours of lectures and case-based discussion
• 9 hours of case-based discussion in small groups.

The Faculty will present a summary of the available evidence underlying current radiotherapy practice in the major treatment sites and identify and discuss those areas of practice for which the evidence remains limited. The application of scientific evidence to clinical practice will be illustrated through the use of case-based discussions in which participants will be encouraged to discuss and present practical solutions to clinical scenarios.

METHODS OF ASSESSMENT
• MCQ
• Evaluation form.

KEY WORDS
Evidence-based medicine, quality of evidence, descriptive statistics, clinical trial, meta-analysis, statistical significance, clinical significance, error, bias, randomisation, stratification, endpoints, uncertainties in clinical practice, therapeutic ratio (gain), target volumes, GTV, CTV, PTV, external beam radiotherapy, brachytherapy, image-guided radiotherapy (IGRT), intensity-modulated radiotherapy (IMRT), prostate cancer, lung cancer, rectal cancer, head and neck cancer, breast cancer, gynaecological cancer, gastric cancer, oesophageal cancer, CNS malignancies, palliation in advanced and metastatic disease.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.
ADVANCED SKILLS IN MODERN RADIOTHERAPY

19 - 23 June 2016
Dublin, Ireland

TARGET GROUP
Radiation therapy is rapidly evolving and this has great impact on the role of radiation therapists (RTTs). The target group for this course are radiation therapists who need to expand or refresh their understanding of modern radiation therapy treatment design and delivery and who want the tools to translate this theory into practice. We will provide a programme that will serve both the new and the more experienced radiation therapist. This course provides a complete package and comprehensive overview and will also help the participant in identifying the appropriate ESTRO courses for advanced education and personal development.

COURSE AIM
Although modern radiation therapy is a group effort of physicians, physicists and radiation therapists, this course aims at radiation therapists only. In this way we will be able to give an overview of the steps in modern radiation therapy with enough room and time for radiation therapist specific tools and skills. The theory taught in these sessions will be translated into practical sessions when possible.

LEARNING OUTCOMES
By the end of this course participants should be able to:
• Appreciate where modern radiation therapy is at with respect to pre-treatment imaging and target definition, treatment planning and image guidance
• Appreciate the importance of knowledge of the entire treatment chain of radiation therapy
• Comprehend and calculate geometrical uncertainties and margins
• Comprehend the physics of image registration and its influence on clinical image registration
• Appreciate the importance of quality assurance.

COURSE CONTENT
• Pre-treatment imaging modalities: what is available and how is it used in target definition?
• Patient preparation and immobilisation: what is (in)possible and is it still important in modern radiation therapy?
• Imaging modalities in the treatment room: what is available and how can it be used to find the target volume?
• Geometrical uncertainties and correction strategies: what are the uncertainties in modern radiation therapy and how do correction strategies affect PTV margins? How to calculate your own margins (workshop)?
• Image registration and evaluation: how to make the best use of the images at hand?
• Understanding algorithms, ROIs, correction reference points: how to create protocols for IGRT management (workshops and hands-on)
• Site specific advanced treatment and IGRT techniques
• Safety issues: the importance of incidence reporting and a feedback loop
• Implementing and managing advanced treatment techniques: how to implement new gained skills in your department in a multidisciplinary environment.

PREREQUISITES
Before commencing this course you should have an interest in all steps of radiation therapy.

COURSE DIRECTOR
Rianne de Jong, Radiation Therapist, Academic Medical Centre, Amsterdam (NL)

LOCAL ORGANISER
Melissa Vanderijst

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

MIRJANA JOSIPOVIC, PHYSICIST, THE FINSEN CENTRE – RIGHOSPITALET, COPENHAGEN (DK)
MARTIJN KAMPBIJS, RADIATION THERAPIST, ACADEMIC MEDICAL CENTRE, AMSTERDAM (NL)
JOSE LUIS LOPEZ GUERRA, RADIATION ONCOLOGIST, UNIVERSITY HOSPITAL VIRGEN DEL ROCIO, SEVILLA (ES)
PETER REMEJEZ, PHYSICIST, THE NETHERLANDS CANCER INSTITUTE, AMSTERDAM (NL)
SOFIA RIVERA, RADIATION ONCOLOGIST, INSTITUT DE CANCEROLOGIE GUSTAVE-ROUSSEY, VILLEJUIF (FR)

LOCAL ORGANISER
Elizabeth Forde, Radiation Therapist, Trinity College, Dublin

TEACHING METHODS
Approximately (4,5 days/36h):
• 23 hours of lectures
• 3 hours of tutorials
• 10 hours of practical workshops.

METHODS OF ASSESSMENT
• MCQ
• Delineation exercise
• Evaluation form.

KEY WORDS
Radiation therapist (RTT), pre-treatment imaging, treatment planning, image guidance, geometrical uncertainties.

FURTHER READING
Please consult the ESTRO website page of this course for further information.
MULTIDISCIPLINARY MANAGEMENT OF HEAD AND NECK ONCOLOGY

26 - 29 June 2016
Florence, Italy

TARGET GROUP
This multidisciplinary course organised as a collaboration between ESTRO and EHNS (European Head and neck Society) is meant for specialists and trainees with interest and expertise in head and neck surgery (head and neck surgeons, oto-rhino-laryngologists, maxillo-facial surgeons, reconstructive surgeons, etc.), radiation oncologists, medical oncologists and other medical specialties involved in the treatment of patients with head and neck cancer.

BACKGROUND
Over the last decade tremendous progress has been made in the biological understanding and management of patients with head and neck cancer. Significant progress has been made in tumour profiling and in the identification of cancer. Significant progress has been made in the biological understanding and management of patients with head and neck cancer.

METHODS OF ASSESSMENT
By the end of this course participants should be able to:
- Understand the evolving concepts of head and neck epidemiology and tumour biology, with special focus on squamous cell histotype. Rare histotypes will be also included.
- Interpret complex head and neck imaging for the purpose of treatment decision making and therapy
- Make judgements regarding multidisciplinary reasoning and management of tumours in the light of alternative and sometime competing treatment options including surgery and the role of systemic and targeted therapies
- Make judgments about the availability of evidence for treatment recommendations
- Understand the challenges of supportive care
- Understand the principles and practice of modern radiotherapy.

LEARNING OUTCOMES
Tumours surgery, radiotherapy and medical oncology chemotherapy approach
- Management of the neck nodes
- Concepts behind selection and delineation of target volumes in radiotherapy
- Morbidity (acute and late) of treatment
- Supportive care during and after treatment
- Metastatic disease
- Management of recurrent tumours
- Second primary tumours.

PREREQUISITES
Before commencing this course, participants should have a medical degree with strong interest in head and neck tumour management from the radiation oncology, medical oncology or head and neck surgery point of view.

FACULTY
Course directors
Vincent Grégoire, Radiation Oncologist, Cliniques Universitaires St-Luc, Brussels (BE)
René Leemans, Head and Neck Surgeon, VU University Medical Centre, Amsterdam (NL)
Lisa Licitra, Medical Oncologist, Istituto Tumori, Milan (IT)

Teachers
Jesper Grau Eriksen, Clinical Oncologist, Odense University Hospital, Odense (DK)
Cai Grau, Radiation Oncologist, Aarhus University Hospital, Aarhus (DK)
Jean-Pascal Machiels, Medical Oncologist, Cliniques Universitaires St-Luc, Brussels (BE)
Piero Nicolai, Oto-Rhino-Laryngologist and Head and Neck Surgeon, University of Brescia, Brescia (IT)
Frank A. Pameijer, Radiologist, University Medical Center Utrecht, Utrecht (NL)

Local organisers
Lorenzo Livri, Radiation Oncologist, University of Florence, Florence
Pierluigi Bonomo, Radiation Oncologist, University of Florence, Florence

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

Application for ESMO-MORA points is submitted to ESMO the European Society for Medical Oncology representing medical oncologists. Information on the status of the applications can be obtained from the ESTRO office.

COURSE CONTENT
- Anatomy (clinical and radiologic aspects) incidence, pathology, risk factors (including HPV) of head and neck tumours
- Clinical work-up for oral cavity and pharyngo-laryngeal tumours, staging and follow up
- "Organ preservation" approach
- Rationale for unconventional radiotherapy fractionization, hypoxic sensitisers, concomitant chemo, EGFR inhibitors and new targeted agents
- Management of oral cavity tumours: medical oncology, surgery and radiotherapy (including brachytherapy)
- Management of nasopharyngeal carcinoma
- Management of oropharyngeal tumours: medical oncology, surgery and radiotherapy (including brachytherapy)
- Management of hypopharyngeal and laryngeal tumours: surgery, radiotherapy and medical oncology chemotherapy approach
- Management of nasal cavity and para-nasal sinuses
MULTIDISCIPLINARY MANAGEMENT OF LUNG CANCER

26 - 28 June 2016
Moscow, Russia

TARGET GROUP
The course is meant specialists and trainees with some expertise in radiotherapy, surgery or chemotherapy that are interested in the management of lung cancer.

COURSE AIM
This advanced multidisciplinary course, jointly organised by ESTRO, ESTS, ESSO aims at promoting an integrated approach to the diagnosis and management of lung cancer. The goal is to individualise the patient treatment approach based on the clinical presentation, prognostic factors, tumour extent and the patient. In the last decades, we have seen major technical and clinical improvements both for the diagnosis (including the different imaging procedures) and the treatment (surgery, radiotherapy, chemotherapy and targeted therapies) for this very common and aggressive tumour, with clear benefit for the patients.

The course will be very interactive through the integration of lectures, debates and cases discussions and definitely multidisciplinary with a programme outlining the different treatments for lung cancer from evidence based medicine to the on-going research. The faculty will include chest physicians, radiologists, medical oncologists, thoracic surgeons and radiation oncologists.

LEARNING OUTCOMES
By the end of this course participants should be able to:
- Stage a patient and to follow up after treatment
- Have active participation in multidisciplinary discussions
- Understand the limits of surgery, chemotherapy and radiotherapy
- Design a radiation plan for lung cancer
- Evaluate a patient for treatment.

COURSE CONTENT
- Pitfalls in imaging procedures
- PET in daily clinical practice
- The biology of lung cancer
- Patient evaluation before radical treatment
- From mediastinal staging to lobectomy with lymph node dissection
- Adjuvant and neo-adjuvant chemotherapy for resectable tumours
- Chemotherapy or chemo-radiotherapy for borderline resectable tumours
- The limitations of surgery for stage III tumours
- Is there still a place for postoperative radiotherapy
- State-of-the-art chest radiotherapy
- Chemoradiotherapy for locally advanced NSCLC
- The oligometastatic concept
- The use of molecular markers
- Management of acute and late effects of chemoradiotherapy
- The challenge of brain metastases
- Integration and organisation of supportive care
- Multimodality treatment of SCLC
- Clinical case discussions
- Mesothelioma.

PREREQUISITES
Before commencing this course, participants should:
- Have basic knowledge of lung cancer
- Be a trainee in surgery or radiotherapy
- Have seen treatment planning.

FACULTY
Course director
Paul Van Houtte, Radiation Oncologist, Institut Bordet, Brussels (BE)

Teachers
Dirk De Ruysscher, Radiation Oncologist / Radiotherapist, University Hospital Gasthuisberg, Leuven (BE)
Jaroslaw Kuzdzal, Thoracic Surgeon, John Paul II Hospital, Krakow (PL)
Rene-Olivier Mirimanoff, Radiation Oncologist, CHUV, Lausanne (CH)
Solange Peters, Medical Oncologist, University Medical Centre, Vaudois (CH)
Rolf Stahel, Medical Oncologist, University Hospital Zurich, Zurich (CH)
Gonzalo Varela, Thoracic Surgeon, Hospital Universitario de Salamanca, Salamanca (ES)
Virginie Westeel, Pulmonologist, CHU Besancon, University of France-Comte, Besançon (FR)

Local organiser
Marina Kislyakova, Radiation Oncologist, NN Blokhin Russian Cancer Research Center, Moscow

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

TEACHING METHODS
- 16 hours of lectures
- 2 hours of tutorials
- 6 hours of discussions.

METHODS OF ASSESSMENT
- MCQ
- Evaluation form.

KEY WORDS
Lung cancer, multimodality, radiotherapy.

FURTHER READING
Please consult the ESTRO website page of this course for further information.
BASIC CLINICAL RADIOBIOLOGY

6 - 10 July 2016
Chengdu, China

TARGET GROUP
The course is aimed at:
- Trainees in radiotherapy
- Radiation oncologists who lack basic radiobiological science or want to update their knowledge (i.e. for CME)
- Medical physicists who wish to familiarise themselves with this field
- Physicians from other disciplines administering ionising radiation
- Radiation therapists (RTTs).

COURSE AIM
The aim is to provide an introduction to radiation biology as applied to radiotherapy. It will cover the basic mechanisms of cell death/survival and the radiation response of tumours and normal tissues. Formulas of tissue tolerance will be explained. The biological basis for current approaches to the improvement of radiotherapy will be described including novel fractionation schemes, retreatment, IMRT, modification of hypoxia, hadron therapy, combined radiotherapy/chemotherapy and biological modifiers of tumour and normal tissue effects.

PREREQUISITES
Before commencing this course you should:
- Ensure your knowledge of basic biology and physics is at least high-school level
- Familiarise yourself with access to journals covering radiobiology related to radiotherapy.

LEARNING OUTCOMES
By the end of this course participants should be able to:
- Understand the biology of how ionising radiation is able to effectively treat cancer
- Distinguish radiotherapy and its advantages from other cancer therapies
- Have the essential knowledge of radiobiology necessary for qualifying examinations.

COURSE CONTENT
- A series of basic lectures introducing molecular and clinical radiobiology
- Mechanisms and models or radiation cell killing
- The linear–quadratic approach to fractionation
- Molecular basis of radiation response
- Radiobiology and tolerance of normal tissues to (re)treatment
- Alternative fractionation schedules in radiotherapy
- Tumour hypoxia and the microenvironment
- Combined radiotherapy and chemotherapy
- The volume and dose-rate effect in radiotherapy
- Biological response modifiers (tumours, normal tissues) and molecular approaches to therapy
- Protons and other particles in radiotherapy
- Radiation-induced malignancies.

LOCAL ORGANISERS
Jinyi Lang, Radiation Oncologist, Sichuan Cancer Hospital & Institute, Chengdu

TEACHING METHODS
- 27 hours of lectures
- 3 hours of tutorials
- 4 hours of discussions.

METHODS OF ASSESSMENT
- MCQ
- Evaluation form.

KEY WORDS
Radiobiology, radiation biology, radiation oncology, radiotherapy.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.
HAEMATOLOGICAL MALIGNANCIES
In collaboration with ILROG
(International Lymphoma Radiation Oncology Group)

1 - 3 September 2016
Vienna, Austria

TARGET GROUP
Radiation oncologists involved in the treatment of haematological malignancies.

COURSE AIM
The aim of this course is to:
- Enable radiation oncologists to participate in the multidisciplinary management of haematological malignancies
- Administer radiotherapy to these diseases according to modern principles, using up-to-date technology to achieve maximum cure rates while at the same time minimising the risk of long-term complications.

LEARNING OUTCOMES
By the end of this course participants should be able to:
- Design strategies for the multimodality treatment of haematological malignancies
- Apply modern principles for radiotherapy in the multimodality setting
- Define target volumes and prescribe radiation doses and fractionation schedules appropriate for different haematological malignancies
- Apply and evaluate different treatment techniques depending on disease localisations and risks of normal tissue complications.

PREREQUISITES
Before commencing this course participants should:
- Be a radiation oncologist with some experience
- Have an interest in and knowledge of the spectrum of haematological malignancies
- Read the publications mentioned below
- Have completed the exercise on the two contouring cases sent out in advance.

COURSE CONTENT
- Role of radiation oncology in the multimodality treatment of lymphomas
- General principles of treatment: radiotherapy, chemotherapy, immunotherapy, radioimmunotherapy, combined modality treatment and long-term toxicity
- Imaging for radiotherapy
- Hodgkin lymphoma: classic and lymphocyte predominance; early and advanced stages, recurrence; radiotherapy volumes, doses and techniques
- Indolent nodal non-Hodgkin lymphoma: early and advanced stages, recurrence, radiotherapy volumes, doses and techniques
- Aggressive nodal non-Hodgkin lymphoma: early and advanced stages, recurrence, radiotherapy volumes, doses and techniques
- Extranodal lymphomas: characteristics, role of radiotherapy, volumes, doses and techniques
- Other indications for radiotherapy: myeloma, granulocytic sarcoma, hypereosinophilia, total body irradiation as conditioning for transplant: volumes, doses and techniques.

FACULTY
Course director
Lena Specht, Clinical Oncologist, Rigshospitalet, Copenhagen (DK)

Co-course director
Joachim Yahalom, Radiation Oncologist, Memorial Sloan-Kettering Cancer Centre, New York (USA)

Teachers
Berthe Aleman, Radiation Oncologist, The Netherlands Cancer Institute, Amsterdam (NL)
Anne Kiil Berthelsen, Radiologist, Rigshospitalet, Copenhagen (DK)
Andreas Engert, Medical Oncologist/Hematologist, University of Cologne, Cologne (DE)
Tim Illidge, Clinical Oncologist, Christie Hospital, Manchester (UK)
George Mikhaila, Radiation Oncologist, Guy’s & St Thomas’ Hospital, London (UK)
Umberto Ricardi, Radiation Oncologist, University of Torino, Turin (IT)

Contouring administrator
Berardino De Bari, Radiation Oncologist, University Hospital Lausanne, Lausanne (CH)

Local organiser
Karin Diefckmann, Radiation Oncologist, Medical University of Vienna, Vienna

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

METHODS OF ASSESSMENT
- 22 hours of lectures
- 2 hours of practical workshops
- 4 hours of case discussions.

State-of-the-art radiotherapy in the treatment of haematological malignancies will be discussed. The format of the course will be a combination of lectures and case discussions. A delineation session will be included, for which the participants will be expected to have done some homework in advance.

KEY WORDS
Haematological malignancies, lymphoma, radiotherapy, combined modality treatment.

MULTIMODAL CANCER TREATMENT
VH027

This course is using the FALCON platform (Fellowship in Anatomic deLineation & CONtouring) for the contouring exercises.
PALLIATIVE CARE AND RADIOThERAPY

A course on prognosis, symptom control, re-irradiation, oligometastases

8 - 10 September 2016
Brussels, Belgium

TARGET GROUP
This basic course is aimed primarily at trainee radiation and medical oncologists and experienced radiation and medical oncologists who want an update of their clinical knowledge. Clinical physicists, palliative care physicians and specialist nurses are welcome to participate.

COURSE AIM
In this course, a comprehensive overview of the applicability and effectiveness of palliative radiotherapy schedules from an evidence based perspective will be provided in a multidisciplinary framework. Focus will be on both clinical-ethical aspects and more technical-physics related issues.

LEARNING OUTCOMES
By the end of this course participants should:
- Have knowledge of the principles of palliation, pain management, and indications for and effectiveness of palliative radiotherapy schedules
- Be able to discuss clinical cases on management, expected survival, clinical outcome in terms of quality of life and side effects using evidence based outcome tools.

COURSE CONTENT
- Principles of palliation, oligometastasis
- Nature of cancer pain, physiology of pain
- Principles of pharmacological management
- Radiotherapy for pain: bone pain, soft tissue pain
- Holistic pain therapy: integration of RT/CT/pharmacology and non-pharmacological approaches
- Neurological complications: brain metastases - introduction and pharmacological management
- Management of solitary brain metastases
- Management of multiple brain metastases
- Malignant spinal metastasis, pathophysiology, diagnosis and initial management
- Management of malignant spinal canal compression
- Other neurological complications: spinal nerve root compression and neuropathic pain management
- Care of the dying: different models of care
- Lung - NSCLC: palliative management
- Oligometastases and ablative therapy
- Liver: role of radiotherapy in palliation
- Palliative brachytherapy
- Practical application of research data in palliation.

PREREQUISITES
Before commencing this course you should have a basic understanding of radiotherapy and pharmacology and experience of caring for patients with advanced cancer.

FACULTY
- Course directors
  Peter Hoskin, Clinical Oncologist, Mount Vernon Hospital, London (UK)
  Yvette van der Linden, Radiation Oncologist / Head, Expertcentre Palliative Care, Leiden University Medical Center, Leiden (NL)
- Teachers
  Morten Hoyer, Radiation Oncologist, Aarhus University Hospital, Aarhus (DK)
  Johan Menten, Radiation Oncologist / Palliative Care Physician, KU Leuven, Leuven (BE)
  Dirk Rades, Radiation Oncologist, University Hospital of Lübeck, Lübeck (DE)
- Mieke Akkers, Project manager

TEACHING METHODS
- Didactic lectures
- Case discussions
- Interactive session based on MCQ Turning Point exercise
- (E-learning module)

METHODS OF ASSESSMENT
Evaluation form.

KEY WORDS
Palliation, quality of life, evidence based radiation oncology, pain, metastases.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.
PHYSICS FOR MODERN RADIOTHERAPY
A joint course for clinicians and physicists

11 - 15 September 2016
Athens, Greece

TARGET GROUP
The course is primarily aimed at:
• Trainees in radiation oncology or radiation physics
• Radiation oncologists and medical physicists early in their career.
The course may also be useful for:
• Clinicians and physicists who are eager to update their knowledge on physics and technical aspects of radiotherapy after a period of relative lack of access to education on modern technology and techniques.
• Dosimetrists and radiation therapists (RTTs) having a strong interest in the application of physics and technology in radiotherapy
• PhD students in radiation therapy or physics, as this course can broaden their knowledge.

COURSE AIM
The lectures aim to:
• Provide physics knowledge relevant to clinical radiotherapy
• Provide comprehensive overviews of imaging and volume concepts in radiotherapy
• Discuss modern dose delivery techniques, such as IMRT, rotational therapy (VMAT, helical tomotherapy), S(B)RT, IGRT, adaptive therapy (ART), and brachytherapy
• Discuss safety issues in lectures on commissioning and QA/QC, radiation protection, in vivo dosimetry and induction of secondary tumours.
Complimentary to the lectures, this course has clinical case discussions as an important component, discussing planned homework submitted by the participants (see below for details) regarding selected treatment techniques, planning solutions, constraints and objectives, choice of margins, protocols for image guidance, QA, etc.

LEARNING OUTCOMES
By the end of this course participants should be able to:
• Apply, together with the treatment team from your department, modern physics principles and techniques in clinical practice
• Select modern treatment techniques based on their pros and cons
• Select physics and technical measures that enhance accurate and safe application of radiation therapy.

COURSE CONTENT
1. Lectures on:
• IMRT/VMAT - physics and clinical aspects, clinical gains and limitations
• Stereotactic radiotherapy (cranial and extra-cranial)
• Rotational therapy (VMAT, helical tomotherapy)
• Volumes in external beam radiotherapy
• Imaging for GTV definition
• Imaging for treatment preparation and planning
• PTV margin calculation
• IGRT (equipment for in-room imaging, set-up correction strategies, clinical examples)
• Adaptive radiotherapy
• Dose prescription and plan evaluation
• Field junctions
• Commissioning and Quality Assurance/Control of equipment and software
• Brachytherapy
• Radiobiology in the clinic
• In vivo dosimetry
• Radiation protection
• Induction of secondary tumours.
Specific for clinicians:
• Basic radiation physics
• Dose calculation principles and application in the TPS
• Modern radiation therapy equipment
• Physical principles of advanced radiotherapy.
Specific for physicists:
• Reference and non-reference dosimetry
• Modern dose calculation algorithms
• QA for advanced delivery techniques
• Oncologic concepts.

2. Clinical case discussions:
The participants are invited to prepare treatment plans for selected clinical cases (homework), based on case descriptions and CT scans as provided prior to the course. During the course, the plans are discussed in small groups, guided by a clinician and physicist teacher.

PREREQUISITES
The participants are invited to prepare treatment plans for selected clinical cases (homework), based on case descriptions and CT scans as provided prior to the course. During the course, the plans are discussed in small groups, guided by a clinician and physicist teacher.

FACULTY
As the focus is on clinical application, the teachers’ team consists of both radiation oncologists (50%) and medical physicists (50%).

Course director
Ben Heijmen, Physicist, Erasmus MC - Cancer Institute, Rotterdam (NL)

Teachers
Tom Depuydt, Physicist, University Hospital Gasthuisberg, Leuven (BE)
Michael Gaborik, Radiation Oncologist, Karolinska University Hospital – Södersjukhuset, Stockholm (SE)
Ann Heny, Radiation Oncologist, Coorkridge Hospital, Leeds (UK)
Macha Hoogeman, Physicist, Erasmus MC - Cancer Institute, Rotterdam (NL)
Trine Juher-Nottrop, Radiation Oncologist, Herlev University Hospital, Herlev (DK)
Silvia Molinelli, Physicist, Fondazione CNAO, Pavia (IT)

Local organiser
Efi Koutsouveli, Medical Physicist, YTEIA Hospital, Athens

TEACHING METHODS
• 20 hours of plenary lectures
• 5 hours of lectures targeted at clinicians
• 5 hours of lectures targeted at physicists
• 4.5 hours of clinical case discussions in small groups
• 1 hour “meet the expert” session for (individual) discussions between participants and faculty members, potentially covering all kinds of issues related to physics and technology in clinical radiotherapy as brought up by attendees.

METHODS OF ASSESSMENT
• Entry and exit exam
• Evaluation form.

KEY WORDS
Physics in radiotherapy, modern treatment techniques.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

Application for CPD recognition is submitted to the European Federation of Organisations for Medical Physics (EOMP), as a CPD event for medical physicists. Information on the status of the applications can be obtained from the ESTRO office.

WHO?
AND DELIVERY
TREATMENT PLANNING AND DELIVERY
RADIOTHERAPY
## BASIC TREATMENT PLANNING

9 - 13 September 2016
Cambridge, UK

### TARGET GROUP
Radiation therapists (RTTs) with little or no experience of organ at risk delineation and 3D conformal treatment planning. The course is also suitable for other radiation healthcare professionals (trainer radiation oncologists and trainer radiation physicists) who wish to improve their organ at risk delineation and basic treatment planning skills.

### COURSE AIM
- To provide education in organ at risk delineation and treatment planning, for designated sites, as an integral part of the pre-treatment preparation of patients
- To learn basic computer planning methodology, as well as the principles of organ at risk delineation, verification and how to evaluate and improve treatment plans
- To give the participants the opportunity to gain practical experience of producing and evaluating treatment plans using a 3D computer planning system under the guidance of the faculty and through peer exchange
- To provide a forum for participants to gain and exchange knowledge on treatment planning practices and standards throughout the radiotherapy community.

### LEARNING OUTCOMES
By the end of this course participants should be able to:
- Understand the physical concepts underpinning 3D conformal treatment planning
- Delineate organs at risk in pelvis and thorax
- Prepare, discuss and evaluate 3D conformal treatment plans for different palliative sites as well as for prostate, breast and lung cancer
- Discuss verification strategies for the designated sites.

### COURSE CONTENT
- Introduction to treatment planning process
- Clinical overview of designated sites
- Delineation for 3D conformal treatment planning
- The process of treatment plan evaluation including the tools available
- Imaging and verification in planning process
- Practical laboratory planning sessions on designated clinical sites
- Group feedback on plan evaluation and improvement as well.

### TP SYSTEMS
Monaco, Oncentra External Beam, Pinnacle³, Eclipse, RayStation.

### PREREQUISITES
Before commencing this course participants should be able to provide:
- General information regarding delineation, treatment planning, treatment and verification from their individual departments.
- More specific details of e.g. dose volume constraints, treatment planning technique for the designated sites from their individual department as part of the interactive approach.

### FACULTY
**Course director**
David Sjöström, Physicist, Herlev University, Herlev (DK)

**Teachers**
Steve Buckney, Senior Dosimetrist, St. Luke’s Radiation Oncology Network, Dublin (IE)
Danilo Pasini, Radiation Therapist, Polichino Universitario A. Gemelli, Rome (IT)
Charles Gillham, Radiation Oncologist, St. Luke’s Radiation Oncology Network Dublin (IE)

Martijn Kampbuis, Radiation Therapist, Academic Medical Centre, Amsterdam (NL)
Paul Kelly, Radiation Oncologist, Cork University Hospital (IE)
Michelle Leech, Associate Professor, TCD Discipline of Radiation Therapy, Dublin (IE)

### LOCAL ORGANISER
Neil Burnet, Radiation Oncologist, Cambridge University - Addenbrooke’s Hospital, Cambridge

### TEACHING METHODS
- 13 hours of lectures
- 3 hours of contouring
- 9 hours of treatment planning workshops
- 4 hours of case discussions

The course consists of didactic lectures, interactive sessions and practical treatment planning sessions. Introductory lectures will be given on specified sites and participants will then discuss, plan and review practical clinical scenarios. On the designated sites participants will delineate organs at risk and subsequently complete a range of 3D plans for presentation and discussion. This will facilitate a greater depth of understanding of both the planning and evaluation processes. Participants will be asked to provide details of clinical organ at risk delineation and treatment planning solutions from their individual departments as part of the interactive approach.

### METHODS OF ASSESSMENT
- MCQ
- Delineation exercise
- Evaluation form.

### KEY WORDS
Basic, treatment planning, delineation, 3DCRT, practical sessions.

### FURTHER READING
Please consult the ESTRO website page of this course for further information.

### ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

### METHODS OF ASSESSMENT
- Evaluation form.
- MCQ

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**This course is using the FALCON platform (Fellowship in Anatomic deLineation & CONtouring) for the contouring exercises.**
ADVANCED TREATMENT PLANNING

14 - 18 September 2016
Cambridge, UK

TARGET GROUP
The course is aimed primarily at staff involved in advanced treatment planning in daily routine, preferably with at least two years of experience. This is designed not only for radiation therapists (RTTs) but also for physicists and radiation oncologists with clinical experience and a basic understanding of the fundamental components of treatment planning who wish to deepen their knowledge on various planning techniques.

COURSE AIM
This five day course intends to enhance the knowledge of comprehensive treatment planning and the understanding of strategies to obtain optimal treatment plans for patients. This implies a complex integration of clinical, imaging, biological and physical/technological knowledge, skills and competencies. This advanced course focuses on challenging scenarios related to the interaction of these issues with a specific focus on advanced adaptations of close distribution, with and without computer aided optimisation and modelling, in particular in more complex cases.

LEARNING OUTCOMES
By the end of this course participants should be able to:
• Have a comprehensive understanding of all parts of the planning process and also plan evaluation for intensity modulated radiotherapy (both step-and-shoot IMRT and VMAT)
• Increase accuracy as well as effectiveness in the planning process
• Understand the basis for comparing different plans for the same case
• Understand the problem of competing priorities in planning
• Appreciate the concept of plan optimisation.

COURSE CONTENT
• Broadening the therapeutic band width
• Dose calculation algorithms and their differences in clinical impact
• Applying ICRU in treatment planning
• Non-IMRT planning – from simple to complex
• Relationships between 3D dose distributions and clinical toxicities, chest, head and neck, pelvis
• Rationale behind IMRT
• Practical guidelines for both step-and-shoot IMRT and VMAT planning
• Physical and biological optimisation
• Pareto fronts in clinical practice
• Geometric uncertainties and how to deal with them
• Molecular imaging in treatment planning
• Adaptive planning strategies
• Library planning, dose painting planning, robust and probabilistic planning.

TP SYSTEMS
iPlan, Monaco, Oncentra External Beam, Pinnacle³, RayStation, Eclipse and Tomotherapy.

PREREQUISITES
Before commencing this course participants should:
• Have at least two years experience of radiotherapy planning
• Understand the ICRU definitions of GTV, CTV and PTV
• Understand the relationship between target dose and organs at risk.

FACULTY
Course director
Gert Meijer, Medical Physicist, UMC Utrecht, Utrecht (NL)

Co-chair
Neil Burnet, Radiation Oncologist, Cambridge University and Addenbrooke’s Hospital, Cambridge (UK)

Teachers
Desirée van den Bongard, Radiation Oncologist, UMC Utrecht, Utrecht (NL)
Nicola Dinapoli, Radiation Oncologist, University Clinics A Gemelli, Rome (IT)
Ursula Nestle, Radiation Oncologist, Universitätsklinikum Freiburg, Freiburg (DE)
Michael Sharpe, Medical Physicist, Princess Margaret Cancer Centre, Toronto (CA)
Marcus Stock, Physicist, Medical University of Vienna, Vienna (AT)

Local organiser
Neil Burnet, Radiation Oncologist, Cambridge University and Addenbrooke’s Hospital

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

TEACHING METHODS
• 19 hours of lectures
• 9 hours of practical workshops
• 4 hours of case discussions.

METHODS OF ASSESSMENT
• MCQ
• Evaluation form.

KEY WORDS
Radiotherapy planning, intensity modulated radiotherapy, IMRT, VMAT.

FURTHER READING
Please consult the ESTRO website page of this course for further information.
IMAGING FOR PHYSICISTS

18 - 22 September 2016
Florence, Italy

TARGET GROUP
The course is aimed at trainees in radiotherapy physics, researchers as well as more experienced radiotherapy physicists with an interest in the application of advanced imaging techniques in their radiotherapy practice.

COURSE AIM
- Improve the understanding of the physics principles of MRI, PET and CT
- Explore potential applications of these imaging modalities in clinical practice.

LEARNING OUTCOMES
By the end of this course participants should be able to:
- Understand the basic concepts of MRI and PET physics
- Understand the key technical challenges and solutions unique to the application of MRI, PET and advanced CT in radiotherapy
- Understand the potential and challenges of biological imaging methods in radiotherapy treatment planning and follow-up.

COURSE CONTENT
- Basic principles of MRI physics
- Fast scanning techniques and volume sequences on MRI
- MRI equipment
- Geometrical integrity of MR images
- Physics aspects of MRI-guided interventions
- Physics of 4D CT
- Physics of cone-beam CT
- PET image reconstruction, SUV thresholding
- The use of PET tracers other than FDG
- Physics principles of advanced functional MRI techniques
- Clinical application in radiotherapy for cancers in brain, head and neck, pelvis (cervix, prostate).

PREREQUISITES
Before commencing this course participants should have basic knowledge of radiotherapy physics.

FACULTY
Course director
Uulke van der Heide, Medical Physicist, The Netherlands Cancer Institute, Amsterdam (NL)

Teachers
Piet Dirix, Radiation Oncologist, Iridium Cancer Network, Antwerp (BE)
Koos Geleijns, Physicist, Leiden University Medical Centre, Leiden (NL)
Gary Liney, Physicist, Ingham Institute for Applied Medical Research, Liverpool (AU)
Eirik Malinen, Physicist, University of Oslo, Oslo (NO)
Cynthia Ménard, Radiation Oncologist, Princess Margaret Hospital, Toronto (CA)
Tirfe Nyholm, Physicist, Umeå University, Umeå (SE)
Daniela Thorwarth, Physicist, Uniklinik für Radioonkologie, Tübingen (DE)

Local organisers
Lorenzo Livi, Radiation Oncologist, University of Florence, Florence
Stefania Pallota, Physicist, University of Florence, Florence

TEACHING METHODS
- 25 lectures (50 minutes lectures)
- 6 hours of discussions including case assignment presentations.

METHODS OF ASSESSMENT
- MCQ
- Evaluation form
- Case assignments.

KEY WORDS
MRI, PET, CT.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CPD recognition is submitted to the European Federation of Organisations for Medical Physics (EFOMP), as a CPD event for medical physicists. Information on the status of the applications can be obtained from the ESTRO office.
COMPREHENSIVE QUALITY MANAGEMENT IN RADIOTHERAPY – RISK MANAGEMENT AND PATIENT SAFETY

1 - 4 October 2016
Avignon, France

TARGET GROUP
The course is aimed at radiation oncologists, medical physicists, radiation technologists, quality managers and any other health professional interested in risk management and patient safety.

BACKGROUND
This course is part of a two year cycle on quality management in radiotherapy, consisting of two complementary modules:
- Risk management and patient safety
- Quality improvement and indicators

Industrial and medical activities expose operators, patients and the general public to the risk of accidents that cause corporal or environmental damage (or both). Harm to operators is very uncommon in radiotherapy, but harm to patients has happened in the past and has had considerable press coverage in many European countries. These widely publicised accidents have focused the attention of both the radiotherapy house and the regulatory authorities on the appropriate preventive actions that could be taken to avoid their repetition.

Fortunately, accidents that actually result in harm to patients are rare. Conversely, small irregularities in the radiotherapy process are very frequent, many hundred a year in every department. A key to the understanding of the genesis of accidents is the fact that these small irregularities (called precursors), as benign as they seem to be when considered isolated, can mesh together to result in a fully developed accident. An accident is not the result of very uncommon irregularities, it is the coincidence of very common irregularities that unfortunately occur at a given point in time.

COURSE AIM
Though accidents are rare and, above all, difficult to prevent, this course however aims to identify their precursors. Actively working on these precursors (registration, description, classification), and working on improvements in the radiotherapy process (prevention) is an efficient way to greatly decrease the risk of accidents. In some European countries it is even mandatory to record and report on precursors.

In addition, the course will also discuss preventive analysis that can be done on any radiotherapy process, by trying to identify a priori critical elements that need specific monitoring or quality controls (failure mode analysis).

LEARNING OUTCOMES
Participants will come to:
- Understand the cause and frequency of incidents-accidents in a radiotherapy department
- Understand the principles of reactive management to incidents (registration, analysis and feedback to the Quality Management System) and of pro-active management of safety (incident prevention)
- Know how to communicate around radiotherapy incidents, with the patient and his/her relatives, within the department itself and with the media.

COURSE CONTENT
- What is risk? Psychology of making mistakes
- Ethics for radiation medicine professionals. A just reporting culture
- Example of the genesis of an accident (take a recent example, relevant to radiotherapy of today)
- ROSIS: the precursor in Europe. Frequency of incidents (who reports and what type of incidents are reported)
- Taxonomy and classification, distinction between incident and accident
- Analysis and return on experience (root cause analysis)
- Failure mode and effect analysis
- PRISMA as example (The Netherlands)
- Benchmarking
- Health failure mode and effect analysis (HFMEA), a prospective risk management method
- Practical exercises (hands on)
- Communication to patient
- Communication to the media
- Communication to the organisation (departmental, hospital level)
- Specific training of staff, internal and external (team management)
- National systems for reporting to regulatory authorities (France)
- Comprehensive quality management in radiotherapy
- Legal aspects of incident reporting
- Performance indicators.

PREREQUISITES
The two courses on Quality Management have been designed to be complementary and that it is recommended to attend both to get a complete picture of Quality Management. However the order in which they are taken does not matter. To fully profit from the course it is recommended that participants have at least three years experience in a radiation oncology or medical physics department in order to have a complete picture of the radiotherapy process.

FACULTY
Course director
Pierre Scalliet, Radiation Oncologist, UCL Cliniques Universitaires St. Luc, Brussels (BE)

Teachers
Peter Dunscombe, Medical Physicist, Tom Baker Cancer Centre, Calgary (CA)
Tommy Knöös, Medical Physicist, Skåne University Hospital, Lund (SE)
Eric Larigaud, Radiation Oncologist, Centre Oscar Lambret, Lille (FR)
Peta Reijnders-Thuysen, Manager Patient Safety, Maastro Clinic, Maastricht (NL)
Aude Vaandering, Radiation Technologist, UCL Cliniques Universitaires St-Luc, Brussels (BE)

Local organiser
Nicolas Pourel, Radiation Oncologist, Institut Sainte Catherine, Avignon

TEACHING METHODS
- 23 hours of lectures
- 6 hours of practical workshops.

METHODS OF ASSESSMENT
Evaluation form.

KEY WORDS
Patient safety, incident management.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.
**TARGET GROUP**
The course is aimed at radiation oncologists in training (compulsory in several centres), radiation oncologists in practice, first year PhD students, and any other individuals (physicists, statisticians, radiation therapists (RTTs)) interested in obtaining a basic understanding of the link between the 5 Rs of radiation oncology and the hallmarks of cancer. Lectures and tutorials are constructed in such a way that relatively little or no background knowledge of molecular biology is necessary. A background in classical radiobiology is a plus, as is attendance at the ESTRO course on basic clinical radiobiology, but neither of these is an absolute requirement.

**COURSE AIM**
The purpose of this course is to provide an appreciation for the biological basis of the 5 Rs of radiation oncology and their relationships to the so-called hallmarks of cancer. A combination of lectures and tutorial sessions with question/answer sessions and literature discussions are used throughout the course. Following completion, participants should have sufficient knowledge to read and appreciate the literature, to understand the concepts of personalised radiation oncology from the biological point of view, follow new developments in applied radiation biology and radiation oncology, and begin to collaborate with their local research groups in this field.

**LEARNING OUTCOMES**
By the end of this course participants should be able to:
- Interpret the 5 Rs of radiation oncology in the context of the hallmarks of cancer
- Understand the biological basis of tumour repopulation
- Describe the molecular basis of the DNA damage response
- Appreciate the biological processes involved in tumour hypoxia and reoxygenation
- Explain cell cycle control, its abnormalities and their effects on tumour radiation responses
- Understand factors which underpin the differing radiosensitivities of different tumours
- Collate this knowledge into a clearer understanding of how to deliver personalised radiation treatment alone and as part of a combined treatment modality with targeted agents.

**COURSE CONTENT**
- The hallmarks of cancer
- The 5 Rs of radiation oncology, primarily from the biological point of view
- Cell signalling pathways that influence tumour cell growth and survival and their responses to radiation
- Mechanisms of DNA repair and how they influence sensitivity to radiation
- The ways in which cancer (and normal) cells die following therapeutic irradiation
- The importance of tumour metabolism in determining the response to radiation
- The physiological response to radiation at the cellular and tumour level and how this impacts on tumour and normal tissue behaviour
- The biological rationales for developing new targeted therapies
- Rational strategies for combined treatment modalities with targeted agents as a means of delivering personalised medicine
- Mechanisms of harnessing the immune system to increase anti-tumour responses following radiotherapy.

**PREREQUISITES**
Before commencing this course participants should:
- Ensure their knowledge of basic biology is at least high-school level, including some basic knowledge of cancer
- Familiarise yourself with access to the journals covering radiobiology related to radiotherapy.

**FACULTY**
Course directors
Kevin Harrington, Radiation Oncologist, The Institute of Cancer Research, London (UK)
Martin Pruschy, Biologist, University Hospital Zürich, Zürich (CH)

Teachers
Jan Alsner, Biologist, Aarhus University Hospital, Aarhus (DK)
Conchita Vens, Biologist, The Netherlands Cancer Institute, Amsterdam (NL)
Marie-Catherine Vozenin, Biologist, Centre Hospitalier Universitaire Vaudois, Lausanne (CH)
Daniel Zips, Radiation Oncologist, Universitätstomologische Klinik, Tübingen (DE)

Local organiser
David Azria, Radiation Oncologist, Montpellier University, Montpellier

**METHODS OF ASSESSMENT**
- MCQ
- Evaluation form.

**KEY WORDS**
Radiobiology, radiation biology, radiation oncology, personalised treatment, cancer biology, hallmarks of cancer.

**FURTHER READING**
Please consult the ESTRO website page for this course for further information.

**ACCREDITATION**
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.
IMAGE-GUIDED AND ADAPTIVE RADIOTHERAPY IN CLINICAL PRACTICE

23 - 27 October 2016
Madrid, Spain

TARGET GROUP
The course is aimed at all professionals in the field of radiation oncology that are involved in target localisation at any point in the treatment chain, this includes radiation oncologists, radiation physicists, and radiation therapists (RTTs). A good understanding of issues related to target delineation, target localisation and patient set-up is a prerequisite as well as some experience in the field. As the emphasis will be on the integration of image guidance and adaptive techniques as well as their practical implementation, the "team effort" is important. Simultaneous participation of physicists, radiation oncologists and radiation technologists is strongly encouraged.

COURSE AIM
- To cover both theoretical and practical aspects related to the clinical implementation of in-room imaging and plan adaptation in radiotherapy
- To review imaging techniques that can be applied in the workflow of conformal radiotherapy and understand how individual links in the chain of events will influence clinical outcome (from treatment prescription to preparation and planning, to patient set-up and verification)
- To identify potential sources of errors in target delineation/localisation and how IGRT can be of help, with special emphasis on conformal radiotherapy, intensity modulated radiotherapy, adaptive radiotherapy and management of organ motion
- To discuss the concept "target delineation – target localisation" at each particular step in the treatment chain and identify appropriate techniques to increase both efficiency as well as efficacy
- To discuss the concept of treatment adaptation and its implementation in the context of the present technological capabilities
- To offer an overview of available technologies and how to integrate these in clinical practice
- To compare available strategies and help define applicability for particular use
- To present the functionality of the equipment and technology, and identify limitations of a particular method
- To present practical recommendations for establishing an efficient image-guided workflow through optimal integration of available technologies and to emphasise the importance of teamwork and training
- To present the components of a QA strategy of IGRT systems.

LEARNING OUTCOMES
By the end of this course participants should be able to:
- Understand the principles of image guided and adaptive radiotherapy
- Be able to implement image guidance for major patient groups in their home clinic
- Understand the relevant choices for the selection of the best image guidance protocol for their home situation
- Know the potential benefits of various image guidance and ART protocols.

COURSE CONTENT
This is a 5-day course organised to identify the influence of image guidance at important steps in the workflow of radiation therapy. The following items will be covered in view of in-room imaging for therapy guidance:
- Image guidance required for treatment prescription
- Image guidance in treatment preparation and treatment planning
- Image guidance in patient set-up and target localisation during treatment
- Strategies and software tools for adaptive RT
- Image guidance in treatment follow-up.

FACULTY
Course directors
Coen Rasch, Radiation Oncologist, Academic Medical Centre, Amsterdam (NL)
Marianne Aznar, Physicist, The Finsen Centre – Rigshospitalet, Copenhagen (DK)

Teachers
Gilles Crehange, Radiation Oncologist, Centre Georges-François Leclerc, Dijon (FR)
Rianne de Jong, Radiation Therapist (RTT), Academic Medical Centre, Amsterdam (NL)
Andrew Hope, Radiation Oncologist, Princess Margaret Hospital, Toronto (Canada)
Helen McNair, Radiation Therapist (RTT), The Royal Marsden NHS Foundation Trust, London (UK)
Uwe Oelfke, Physicist, The Royal Marsden NHS Foundation Trust, London (UK)
Jan-Jakob Sonke, Physicist, The Netherlands Cancer Institute, Amsterdam (NL)
Marcel van Herk, Physicist, The Netherlands Cancer Institute, Amsterdam (NL)

Local organiser
Ruth Rodriguez Romero, Physicist, Hospital Universitario Puerta de Hierro-Majadahonda, Madrid

METHODS OF ASSESSMENT
- MCQ
- Evaluation form.

KEY WORDS
Image guidance, adaptive radiotherapy.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

Application for CPD recognition is submitted to the European Federation of Organisations for Medical Physics (EFOMP), as a CPD event for medical physicists. Information on the status of the applications can be obtained from the ESTRO office.
BEST PRACTICE IN RADIATION ONCOLOGY – A WORKSHOP TO TRAIN RTT TRAINERS

In collaboration with the IAEA
Part I - Train the RTT (radiation therapists) Trainers

24 - 28 October 2016
Vienna, Austria

TARGET GROUP
• Ten groups of three participants from ten European countries. Participants should represent or collaborate with the academic and clinical staff and the radiotherapy representative of their national society
• Participants must be familiar with the current national education programme for radiation therapists (RTTs)
• Participants should commit to:
  - Initiate liaison with the national education provider and prepare appropriate documentation
  - Attend and evaluate the two face to face courses and maintain communication with the faculty in the interim period
  - Design, deliver, evaluate and provide feedback on a series of educational initiatives over a three year period.

FIRST WORKSHOP AIM
• To define the gaps in radiotherapy content and encourage a greater focus on radiotherapy in the existing national education programmes and increase the standard of education for RTTs
• To equip RTTs with the skills necessary to design, organise, deliver and evaluate a course, supported by practical sessions. At the end of the preparatory course, it is expected that participants will have:
  • An outline programme, potential lecturers, evaluation procedure, checklist and timetable of tasks for the first course
  • Commenced the preparation of the topic that they will teach, have gained skills in lecture presentation and started to prepare their first lecture
  • Developed a support network and identified a liaison person in their national education institute
  • Communicated regularly with the faculty highlighting any difficulties encountered.

Second local course (3 days – between January and September 2016)
To deliver and evaluate the second local course. One or two of the international faculty will attend and may contribute if appropriate.

The consolidation course (3 days – October 2017)
To evaluate the first course delivered, plan for the next two courses and indicate how the education element will be sustained.

INTERMEDIATE SUPPORT
To evaluate the first course delivered, plan for the next two courses and indicate how the education element will be sustained.

TIMELINES
• Applications to be received by 29 February 2016
• Selection to be done by 18 March 2016
• Notification and detailed information of the preparatory work to be sent by 31 May 2016.

EDUCATIONAL PROGRAMME

Train the RTT Trainers (5 days – 24 to 28 October 2016)
During this first week there will be introductory lectures on how to design, organise, deliver and evaluate a course, supported by practical sessions. At the end of the preparatory course, it is expected that participants will have:
• An outline programme, potential lecturers, evaluation procedure, checklist and timetable of tasks for the first course
• Commenced the preparation of the topic that they will teach, have gained skills in lecture presentation and started to prepare their first lecture
• Developed a support network and identified a liaison person in their national education institute
• Communicated regularly with the faculty highlighting any difficulties encountered.

First local course (3 days – between January and September 2016)
To deliver and evaluate the first local course. One or two of the international faculty will attend and may contribute if appropriate.

The consolidation course (3 days – October 2017)
To evaluate the first course delivered, plan for the next two courses and indicate how the education element will be sustained.

INTERMEDIATE SUPPORT
To evaluate the first course delivered, plan for the next two courses and indicate how the education element will be sustained.

PREREQUISITES
Before commencing this course participants should:
• Be familiar with the education programme and involved personnel in their country
• Read the ESTRO Core Curriculum (CC) and benchmarking for RTTs and critique the content with respect to their own education programme
• Based on the evaluation of the CC, the benchmarking document and the national/local education programme define possible topics for their short courses.

FACULTY
Course director
Mary Coffey, Adjunct Professor, Division of Radiation Therapy, Trinity College Dublin, Dublin (IE)

Teachers
Elena Fidarova, Radiation Oncologist, International Atomic Energy Agency, Vienna (AT)
Michelle Leech, Associate Professor, Division of Radiation Therapy, Trinity College Dublin, Dublin (IE)
Andreas Ostavics, Radiation Therapist, Medical University of Vienna, AKH, Vienna (AT)
Eduardo Rosenblatt, Radiation Oncologist, Vienna (AT)
Philipp Scherer, Radiation Therapist, Landeskliniken, Salzburg (AT)
Viviane Van Egten, ESTRO office, Brussels (BE)

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

METHODS OF ASSESSMENT
• 12 hours of lectures
• 12 hours of assisted preparation
• 5 hours of feedback sessions
• 4 hours of discussion.

KEY WORDS
Education, learning outcomes, curriculum development.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

Interim support for participants.
Interim support to the participants will be provided through e-learning via EAGLE®.

Second and third course will be delivered between January and December 2018.

APPLICATION
• Notification and detailed information of the preparatory work to be sent by 31 May 2016.

APPLICATION FORM
The application form should be adequately filled out and sent or collaborate with the academic and clinical staff of the national society.

SELECTION PROCEDURE
Applications are accepted per country. Provide three names and a short description of the topics of the first planned course and the target audience (ten lines maximum). Where IAEA support is applicable, the IAEA will make the country selection.

TIME LIMITS
• Applications to be received by 29 February 2016
• Selection to be done by 18 March 2016
• Notification and detailed information of the preparatory work to be sent by 31 May 2016.

EDUCATIONAL PROGRAMME

Train the RTT Trainers (5 days – 24 to 28 October 2016)
During this first week there will be introductory lectures on how to design, organise, deliver and evaluate a course, supported by practical sessions. At the end of the preparatory course, it is expected that participants will have:
• An outline programme, potential lecturers, evaluation procedure, checklist and timetable of tasks for the first course
• Commenced the preparation of the topic that they will teach, have gained skills in lecture presentation and started to prepare their first lecture
• Developed a support network and identified a liaison person in their national education institute
• Communicated regularly with the faculty highlighting any difficulties encountered.

First local course (3 days – between January and September 2016)
To deliver and evaluate the first local course. One or two of the international faculty will attend and may contribute if appropriate.

The consolidation course (3 days – October 2017)
To evaluate the first course delivered, plan for the next two courses and indicate how the education element will be sustained.
ESTRO/ESOR MULTIDISCIPLINARY APPROACH OF CANCER IMAGING

10 - 12 November 2016
Amsterdam, The Netherlands

TARGET GROUP
The target group consists of senior residents, junior radiologists and radiation oncologists who are interested to learn and improve their knowledge on an optimal approach to multidisciplinary treatment management, exploiting the use of imaging.

COURSE AIM
This course, jointly organised by ESOR (European School Of Radiology) and ESTRO, aims at promoting an integrated approach between specialists involved in multidisciplinary tumour boards to tailor the best treatment for each individual patient by exploiting the use of imaging.

New advanced imaging technology not only provides morphological information on tumour extension, but also information on tumour function and biology. It not only allows a good evaluation of tumour response during and after treatment, but also an early detection of tumour recurrence. Radiation oncologists increasingly use hybrid equipment in which diagnostic imaging technology is incorporated within the radiation treatment machines to allow continuous adaptation of radiation treatment according to the daily response of tumour, the surrounding organs and their movements. Radiologists involved in multidisciplinary management teams increasingly recognise the impact of their diagnostic information on clinical decision-making and treatment planning.

LEARNING OUTCOMES
By the end of this course participants should be able to:
- Understand the role of imaging in tailoring an individualised risk based multimodality treatment by a multidisciplinary team
- Identify the main relevant imaging features to optimise treatment modalities in:
  - lung cancer
  - upper abdomen
  - rectal cancer
- Exploit imaging in tailoring and monitoring safe dose delivery.

COURSE CONTENT
Imaging technology in radiology and radiotherapy: basic concepts
- PET, MRI, radiation therapy technology.

Thoracic cancer
- Lung tumour imaging evidences: anatomical, functional, monitoring, FU
- What is the pathway of lung tumour spread and what are the treatment options?
- How accurate can imaging identify local tumour and nodal spread before, during and after the treatments?
- How can we adapt the treatment at the beginning and along the therapies by imaging?
- Workshops on thoracic cancer.

Liver tumours
- Primary liver tumour and colorectal metastases imaging evidences: anatomical, functional, monitoring, FU
- What are the relevant imaging features that we need to know before, during and after the treatments? Imaging of liver tumours with modern CT and MRI
- New MRI technology for imaging moving organs.

Pancreatic tumours
- Pancreas tumour imaging evidences: anatomical, functional, monitoring, FU
- What are the treatment options?
- What is the relevant imaging features that we need to know before, during and after the treatments: state-of-the-art and future imaging
- How can we adapt the treatment at the beginning and along the therapies by imaging?
- Workshops liver and pancreas cancer.

Rectal cancer, tumour extension at primary staging and at response evaluation
- What are the pathways of tumour (nodal) spread and treatment options?
- How accurate can imaging identify local tumour and nodal spread before, during and after the treatments (CT, MRI, Diffusion MRI, PET)?
- How can we adapt the treatment at the beginning and along the therapies by imaging?
- Workshops rectal cancer.

PREREQUISITES
Before commencing this course participants should:
- Review main international guidelines on the course topics
- Participate in tumour boards on the course topics at their institution.

FACULTY
Course directors
Regina Beets-Tan, Radiologist, Maastricht University Hospital, Maastricht (NL)
Vincenzo Valenti, Radiation Oncologist, Università Cattolica S. Cuore, Rome (IT)

Teachers
The teaching faculty is being updated, please visit www.estro-education.org/courses for the latest information.

TEACHING METHODS
- 7 hours of lectures
- 2 hours of practical workshops
- 6 hours of case discussions.

The course consists of didactic lectures, case discussions in small working groups and plenary debates.

METHODS OF ASSESSMENT
- MCQ
- Interactive Workshops
- Evaluation Form.

KEY WORDS
Imaging, multidisciplinary, combined modality treatments, personalised oncology, lung cancer, upper abdomen, rectal cancer.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

WHO?

where is the relevant imaging features that we need to know before, during and after the treatments: state-of-the-art and future imaging
- How can we adapt the treatment at the beginning and along the therapies by imaging?
- Workshops liver and pancreas cancer.

Rectal cancer, tumour extension at primary staging and at response evaluation
- What are the pathways of tumour (nodal) spread and treatment options?
- How accurate can imaging identify local tumour and nodal spread before, during and after the treatments (CT, MRI, Diffusion MRI, PET)?
- How can we adapt the treatment at the beginning and along the therapies by imaging?
- Workshops rectal cancer.

PREREQUISITES
Before commencing this course participants should:
- Review main international guidelines on the course topics
- Participate in tumour boards on the course topics at their institution.

FACULTY
Course directors
Regina Beets-Tan, Radiologist, Maastricht University Hospital, Maastricht (NL)
Vincenzo Valenti, Radiation Oncologist, Università Cattolica S. Cuore, Rome (IT)

Teachers
The teaching faculty is being updated, please visit www.estro-education.org/courses for the latest information.

TEACHING METHODS
- 7 hours of lectures
- 2 hours of practical workshops
- 6 hours of case discussions.

The course consists of didactic lectures, case discussions in small working groups and plenary debates.

METHODS OF ASSESSMENT
- MCQ
- Interactive Workshops
- Evaluation Form.

KEY WORDS
Imaging, multidisciplinary, combined modality treatments, personalised oncology, lung cancer, upper abdomen, rectal cancer.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.
ACCELERATED PARTIAL BREAST IRRADIATION

13 - 16 November 2016
Paris, France

TARGET GROUP
The course is primarily intended for specialists and trainees in the field of radiation and clinical oncology who are interested in extending their knowledge, specifically of the management of early stage and low risk breast cancer.

BACKGROUND
Accelerated partial breast irradiation (APBI) is becoming increasingly popular as a treatment option for early stage breast cancer. Numerous patients have been included in several prospective randomised clinical trials using a wide variety of techniques. We expect that long term results will be presented in the coming years.

This course is planned to be organised in the even years and should be clearly distinguished from the multidisciplinary course that will continue to be organised in the odd years in Europe (or also in the even years if held outside Europe as in 2016). As breast cancer is a very common cancer and APBI can be considered as a quite recognisable approach in modern breast cancer treatment, we hope that by organising both courses on an alternate basis we meet a need of the radiation oncology community.

COURSE AIM
In this course dedicated to APBI, we will present some general issues of breast cancer but especially focus on patient selection and on the variety of techniques that can be used for the delivery of APBI. We will elaborate extensively on the technical aspects of the delivery of this specific form of radiation therapy, including optimal target volume delineation.

Apart from presentations, interactivity will be stimulated by organising clinical case discussions, target volume contouring exercises and debates. The faculty includes specialists in all technical approaches currently used for delivering APBI.

To complete the comprehensive approach, we will invite representatives from the companies to present their technical solutions.

COURSE CONTENT
• Epidemiology: is the proportion of early stage low risk patients increasing?
• The role of imaging in diagnosis and treatment
• Clinically relevant aspects of pathology and biology of breast cancer
• Local surgery: choices and techniques (including oncoplastic)
• APBI techniques including external beam, intraoperative electron beam, interstitial, endocavitary brachytherapy and other techniques
• Pre-operative APBI
• Fractionation schedules
• Combination of external beam APBI with advanced treatment techniques including IMRT and breathing control
• Cosmetic outcome after APBI
• Long-term effects
• Recent and current clinical trials
• Target volume delineation including workshops
• Clinical case discussions.

PREREQUISITES
Before commencing this course participants should:
• Have at least basic experience with all aspect of radiation therapy for breast cancer patients. If the participants are not radiation/clinical oncologists (in training) they should be involved in the interdisciplinary and/or multidisciplinary case discussions and in work related to treating breast cancer patients.
• Exercise beforehand on target volume delineation in breast cancer.

FACULTY
Course director
Philip Poortmans, Radiation Oncologist, Radboud University Medical Center, Nijmegen (NL)

Teachers
Tibor Major, Medical Physicist, National Institute of Oncology, Budapest (HU)
Birgitte Offersen, Clinical Oncologist, Aarhus University Hospital, Aarhus (DK)
Roberto Orecchia, Radiation Oncologist, European Institute of Oncology, Milan (IT)
Vratislav Straud, Radiation Oncologist, University Hospital Erlangen, Erlangen (DE)

Contouring administrator
Sandra Hol, Radiation Technologist, Institute Verbeeten, Tilburg (NL)

Local organiser
Sofia Rivera, Radiation Oncologist, Institut Gustave Roussy, Villejuif

Faculty will be completed with local specialists in specific domains.

METHODS OF ASSESSMENT
• MCQ
• Delineation exercise
• Evaluation Form.

KEY WORDS
Breast cancer, radiation therapy, multidisciplinarity, breast conserving therapy, APBI, clinical trials, volume delineation, side effects, quality of life.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

EUREPAM
International Radiation Oncology Network, European Community
INTRODUCTION
The Masterclass is a special course which brings international experts into a unique teaching format providing great opportunities for high potentials at an early stage of their career. The Masterclass is providing exposure to interactive development of research projects and advanced knowledge in essential and hot topic areas.

The new format focuses both on the major pillars of clinical and scientific radiation oncology (physics/ technology, biology, clinical and translational research; multidisciplinarity) and on the current hot topics, offering a deeper look into the research and innovation strategies in the whole field. The programme has been designed to offer a unique learning experience (interac- tive, problem solving, self-responsibility) and to provide practice-oriented, hands-on training to radiation and clinical oncologists with knowledge in the domain.

The one major part of the programme will offer plenary lectures provided by the faculty focusing on state-of-the-art and on major open research questions in the various fields of research and development. Furthermore, the lectures will provide an overview on opportunities to integrate emerging technologies and basic research results in innovative clinical strategies.

The other major part of the programme is dedicated to the active work of the participants (“hands-on”) providing and discussing research proposals in the various fields of radiation and multidisciplinary oncology.

The Masterclass is overall:
• A 4-day educational retreat for participants and faculty
• For young specialists in oncology (in advanced training/junior consultants) or medical physicists
• Clinically and translational research oriented, with emphasis on integration of innovative technologies and biological knowledge into the clinical setting
• Multidisciplinary, covering pathology, staging and imaging, biology, physics, technologies for planning and delivery of radiation, and integration into medical and surgical oncology settings
• Focused on research in the field of radiation oncology

TARGET GROUP
• Between 30 and 45 years old
• Has knowledge and experience (at least 3 years as resident or specialist) in radiation/clinical/medical oncology or medical physics (with minimum, basic knowledge in radiotherapy)
• Actively involved in scientific activities
• Fluent in English.

 COURSE AIMS
The aim of the course is to provide an overview on state of the art advances in current research in the different fields of radiation and multidisciplinary oncology, including technology and biology oriented research and practical skills for active participation in the various fields of radiation and multidisciplinary oncology research.

Themes for lectures and for research proposals to be presented by participants:
• Oncology research design: to provide knowledge on and to apply appropriate methodology in transla- tional and clinical research, establishment of relevant endpoints and how to assess them
• Technology research and innovations (“Oncotech- nology”): to cover current technology research and options, including treatment planning and delivery, emerging technologies and trials, to apply this knowledge in technology oriented research and trial settings
• Biology and translational oncological research: to focus on emerging biology research and future per- spectives, including systemic treatment, combined treatment, pathology and biological endpoints, to apply this knowledge in biology oriented research and trial settings
• Multidisciplinary oncology research approach: to provide a comprehensive view of the frame of multi- disciplinary trial settings, in particular considering knowledge in medical and surgical oncology, for application in multidisciplinary trial settings.

LEARNING OUTCOMES
By the end of this masterclass the participant should:
• Know about the current research scenarios in clinical radiation oncology, in technology oriented research, in biology and translational related research and in multidisciplinary research
• Improve skills in the definition of research endpoints and their assessment
• Improve skills to identify appropriate research meth- odologies for different research questions
• Be able to design and develop a research proposal in one of the major fields of radiation and multidisciplinary oncology
• Be able to critically assess research proposals in his/her major field of interest.

COURSE CONTENT
Overall main topics for plenary lectures (50%) and research proposals - group discussions (50%)
• Evidence-based methodology for innovation in clinical radiation oncology
• Physics and technology
• Radiobiology and cancer biology
• Multidisciplinarity

For a detailed course programme as well as guidelines for the preparation of the research proposal and pres- entation, please visit our website www.estro.org/school

APPLICATION AND DEADLINES
Attendance to the Masterclass is by application only.
Application deadline: 14 May 2016.
Detailed information and application form available at www.estro.org/school and www.eso.net

FACULTY
Chairs of the Masterclass
Felipe Calvo, Radiation Oncologist, Hospital Gregorio Marañón, Madrid (ES)
Richard Pötter, Radiation Oncologist, Medical University of Vienna, General Hospital of Vienna, Vienna (AT)

Teaching
Jose Belderbos, Radiation Oncologist, Netherlands Cancer Institute, Amsterdam (NL)
Sören Bentzen, Methodologist, University of Maryland School of Medicine, Baltimore MD (US)
Jacques Bernier, Radiation Oncologist, Genolier Swiss Medical Network, Genolier (CH)
Mechthild Krause, Radiation Oncologist, University Hospital Carl Gustav Carus, Technical University Dresden, Dresden (DE)
Eric Lartigau, Radiation Oncologist, Centre Oscar Lambret, Lille (FR)
Roberto Orecchia, Radiation Oncologist, European Institute of Oncology, Milan (IT)
Sanjay Popat, Medical Oncologist, Royal Marsden, London (UK)
Philip Sloan, Pathologist, Newcastle University, Royal Victoria Infirmary, Newcastle (UK)
Daniela Thorwarth, Physicist, University Hospital Tübingen, Tübingen (DE)
Cornelius van de Velde, Surgical Oncologist, University Hospital, Leiden (NL)
Jan B. Vermorken, Medical Oncologist, University Hospital Antwerp Edgemen, Antwerp (BE)
Daniel Zips, Radiation Oncologist, Radiation Oncology University of Tübingen, Tübingen (DE)

Academic coordinator
Elenor Rivin del Campo, Radiation Oncologist, Institu- tut Gustave Roussy, Paris (FR)

Project Managers
Gabriella Axelsson, ESTRO office, Brussels (BE)
Rita de Martini, ESO, Milan (IT)

Further details can be found at www.estro.org/school

FURTHER INFORMATION
All details on prerequisites for the course, teaching methods and methods of assessment as well as sugges- tions for further reading and keywords for the course can be found at www.estro.org/school
EVIDENCE BASED RADIATION ONCOLOGY

How to evaluate the scientific evidence and apply it to daily practice

20 - 25 November 2016
Sydney, Australia

TARGET GROUP
This course is aimed primarily at trainee radiation oncologists. It may also be of interest to radiation physicists and technologists who would like an overview of current clinical practice in the major treatment sites.

COURSE AIM
- The course focuses on the concept of evidence-based medicine and describes the methodology underlying clinical research. We will cover those areas of biomedical statistics necessary for participants to develop skills of critical reading and presentation of research evidence.
- The course will explore the state-of-the-art of radiation therapy in the major tumour sites: breast, oesophagus and stomach, rectum, head and neck, lung, CNS and gynecological malignancies. There is also a separate session dealing with the major issues in palliative radiation therapy.
- The clinical component of the course will comprise a combination of lectures and case discussions. Participants will have the opportunity to discuss clinical scenarios in small groups before the management options are then discussed in the light of the research evidence in plenary sessions.

LEARNING OUTCOMES
By the end of this course participants should be able to:
- Define the hierarchy of evidence and use this to evaluate the basis of radiotherapy treatment protocols
- Identify areas of uncertainty in daily radiotherapy practice
- Describe the statistical basis for the design of clinical trials and critically appraise the published literature
- Identify those aspects of current radiotherapy practice which are supported by the highest levels of evidence and those which are not
- Outline the evidence supporting the use of altered fractionation regimens and combined-modality treatment
- Critically evaluate an oral or written scientific presentation.

COURSE CONTENT
- General introduction to evidence-based medicine
- The terminology of radiation therapy, errors and uncertainties in daily practice
- Statistics for the radiation oncologist, how to describe and interpret data from clinical trials and meta-analyses
- Prostate cancer
- Lung cancer
- Rectal cancer
- Head and neck cancer
- CNS malignancies
- Gynaecological malignancies
- Breast cancer
- Gastric and oesophageal cancer
- Radiation therapy in palliative care.

PREREQUISITES
Before commencing this course participants should:
- Review their institution’s radiotherapy treatment protocols in those areas covered by this course and be prepared to apply and discuss these in case discussions
- Try to distinguish those areas of their practice that can be justified by the available evidence from those where the evidence basis is uncertain
- Be prepared to ask questions and contribute to discussions.

FACULTY
Course director
Chris Cottrill, Radiation Oncologist, St Bartholomew’s Hospital, London (UK)

Teachers
Bernard Dubray, Radiation Oncologist, Centre Henri Becquerel Rouen (FR)
Johannes Kaanders, Radiation Oncologist, Radboud University Nijmegen Medical Centre, Nijmegen (NL)
Yvette van der Linden, Radiation Oncologist, Leiden University Medical Centre, Leiden (NL)
The rest of the faculty will be confirmed on a later date.

TEACHING METHODS
- 31 hours of lectures and case-based discussion
- 9 hours of case-based discussion in small groups.

The Faculty will present a summary of the available evidence underlying current radiotherapy practice in the major treatment sites and identify and discuss those areas of practice for which the evidence remains limited. The application of scientific evidence to clinical practice will be illustrated through the use of case-based discussions in which participants will be encouraged to discuss and present practical solutions to clinical scenarios.

METHODS OF ASSESSMENT
- MCQ
- Evaluation form.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

KEY WORDS
Evidence-based medicine, quality of evidence, descriptive statistics, clinical trial, meta-analysis, statistical significance, clinical significance, error, bias, randomisation, stratification, endpoints, uncertainties in clinical practice, therapeutic ratio (gain), target volumes, GTV, CTV, PTV, external beam radiotherapy, brachytherapy, image-guided radiotherapy (IGRT), intensity-modulated radiotherapy (IMRT), prostate cancer, lung cancer, rectal cancer, head and neck cancer, breast cancer, gynaecological cancer, gastric cancer, oesophageal cancer, CNS malignancies, palliation in advanced and metastatic disease.

FURTHER READING
Please consult the ESTRO website page of this course for further information.
PAEDIATRIC RADIATION ONCOLOGY

3 - 5 December 2016
Bangkok, Thailand

TARGET GROUP
The course is meant for trainees and specialists in radiation oncology interested in the field of paediatric radiation oncology.

COURSE AIM
Paediatric radiation oncology covers many different and complex fields in paediatric oncology. The distribution of knowledge on a worldwide level is an important component of the PROS-ESTRO teaching course on paediatric radiation oncology. The rarity of childhood neoplasms and the complexity of their management due to several factors are putting high demands on the application of radiation therapy. A comprehensive knowledge of the management of paediatric malignancies, not only addressing radiation oncology treatment technologies, is therefore mandatory for an optimal management of childhood cancer.

LEARNING OUTCOMES
By the end of this course participants should be:
- Paediatric radiation oncology in clinical studies, requirements and shortcomings
- Networks for clinical studies
- Modern technologies in radiation therapy - an overview
- Proton beam therapy in childhood tumours
- Specific cancers
- Hodgkin’s Lymphoma
- CNS-tumours (Medulloblastoma, Ependymoma)
- Soft tissue sarcoma
- Wilms’ tumour
- Ewing sarcoma
- Plenary lectures and seminars with practical examples (individual case management) and final plenary case discussions.

PREREQUISITES
Before commencing this course participants should be:
- In training radiation oncologists or qualified radiation oncologists
- Paediatric oncologists (in training or qualified)
- Radiation therapists (RTTs) or medical physicists under education or qualified.

FACULTY
Course directors
Rolf Dieter Kortmann, Radiation Oncologist, University of Leipzig, Leipzig (DE)
Christian Carrie, Radiation Oncologist, University of Turin, Turin (IT)

Teachers
Christian Carrie, Radiation Oncologist, Centre Leon Berard, Lyon (FR)
Karin Dieckmann, Radiation Oncologist, University of Vienna, Vienna (AT)
Carolyn Freeman, Radiation Oncologist, McGill University, Montreal (CA)
Tim Jaspan, Radiologist, University of Nottingham (UK)

Roger Taylor, Clinical Oncologist, South Wales Cancer Institute, Swansea (UK)
Beate Timmermann, Radiation Oncologist, West-German Proton Therapy Centre Essen, WPE, Essen (DE)
David Walker, Paediatric Oncologist, University of Nottingham, Nottingham (UK)

Contouring administrator
Silvia Scoccianti, Radiation Oncologist, Azienda Ospedaliero Universitaria Careggi, Florence (IT)

Local organisers
Somjai Dangprasert, Radiation Oncologist, Ramathibodi Hospital, Bangkok
Chomporn Sithathee, Radiation Oncologist, Ramathibodi Hospital, Bangkok

METHODS OF ASSESSMENT
- MCQ
- Delineation exercise
- Evaluation form.

FURTHER READING
Please consult the ESTRO website page of this course for further information.

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.
ADVANCED TECHNOLOGIES

6-10 December 2016
Pune, India

TARGET GROUP
The course is aimed at radiation oncologists, radiation physicists and radiation therapists (RTTs) who wish to participate in advanced technologies such as IMRT and IGRT in their department. Some experience in the field of conformal therapy, target delineation and treatment planning is a prerequisite. Making advanced technologies work is a team effort therefore simultaneous participation of the above-mentioned three disciplines is strongly recommended.

COURSE AIM
The aim of the course is to provide:
- Understanding of the principles and background of IMRT and IGRT
- Knowledge on the impact of various geometrical uncertainties and where they can be minimised
- Knowledge of QA of IMRT and IGRT
- An overview of available techniques, being able to choose between techniques and knowledge of their limitations
- Planar and 3D in room imaging
- Workflow and efficiency at the department for implementation of IMRT and IGRT
- Clinical rationale, limitations and evidence for advanced technologies
- Knowledge of inverse treatment planning optimisation, biological optimisation and dose painting.

LEARNING OUTCOMES
By the end of this course participants should be able to:
- Implement IGRT and ART in their own clinic
- Tailor IGRT and ART to their specific home situation.

COURSE CONTENT
- Panel and participants discussion: IMRT and IGRT, the case for and against
- Dose volume constraints
- Methods of optimisation
- Dosimetry of IMRT
- Imaging and target delineation
- Geometrical uncertainties
- Planar and volumetric imaging
- Image registration
- Setup correction strategies
- Clinical sessions on thorax, pelvic and head and neck cancer covering the interaction of physics and clinic
- Workflow in the clinic including “how they do that” tips.

PREREQUISITES
The course is aimed at the whole team involved in image guidance. Participants are strongly encouraged to come as a team i.e. radiation oncologist, physicist and radiation therapists (RTTs). Some experience with IGRT is preferred yet no specific entry-course or expertise is requested.

FACULTY
Course director
Coen Rasch, Radiation Oncologist, Academic Medical Centre, Amsterdam (NL)

Teachers
Renaud De Crevoisier, Radiation Oncologist, Centre Eugene Marquis, Rennes (FR)
Rianne De Jong, Radiation Therapist (RTT), Academic Medical Centre, Amsterdam (NL)
Tom Depuydt, Physicist, University of Leuven, Leuven (BE)
Andrew Hope, Radiation Oncologist, Princess Margaret Hospital, Toronto (CA)

ACCREDITATION
Application for CME recognition will be submitted to the European Accreditation Council for Continuing Medical Education (EACCME), an institution of the European Union of Medical Specialists (UEMS). EACCME credits are recognised by the American Medical Association towards the Physician’s Recognition Award (PRA). Information on the status of the applications can be obtained from the ESTRO office.

TEACHING METHODS
- 26 hours of lectures
- 4 hours of demonstrations.

METHODS OF ASSESSMENT
Evaluation form.

KEY WORDS
Image guidance (IGRT), adaptive radiotherapy (ART).

FURTHER READING
Please consult the ESTRO website page of this course for further information.
Live Teaching Courses 2016
UNDERGRADUATE TRAINING FOR MEDICAL STUDENTS

NEW
MEDICAL SCIENCE SUMMER SCHOOL ONCOLOGY FOR MEDICAL STUDENTS (GRONINGEN/VIENNA)
4 - 15 July 2016 | Groningen, The Netherlands

NEW
ESO-ESSO-ESTRO MULTIDISCIPLINARY COURSE IN ONCOLOGY FOR MEDICAL STUDENTS
29 August - 9 September 2016 | Poznan, Poland
The Medical University of Vienna and the University of Groningen collaborate in the organisation of a Medical Sciences Summer School on Oncology for Medical Students: in even years the Summer School on Oncology takes place at the University Medical Center Groningen, in uneven years it takes place at the Medical University of Vienna.

Both Summer Schools will be supported by ESTRO, ESSO and ESO starting in 2016. From that time they will collaborate under the umbrella of ESO-ESSO-ESTRO under the auspices of UICC and supported by the WHO Collaborating Centre for Cancer Education.

The medical faculty of the Groningen/Vienna Summer Schools is to teach a multidisciplinary approach to oncology to medical students before they enter the clinic. The first Summer School in Groningen was held in 1996 and in Vienna in 1999. So far, students from both Summer Schools recorded high satisfaction with the organisation, scientific content and topic range.

**Course Aim**
- To teach a multidisciplinary approach to oncology to medical students in the final phase of their studies.
- To help students to become familiar with cancer care in general health practice, to reduce fear of patients with a malignant disease and to learn more about cancer related problems in other countries.
- To introduce cancer related research and development, new technologies in diagnostic procedures (invasive and non-invasive) and modern multidisciplinary treatment approaches.
- To become familiar with preparing abstracts and posters and presenting at an international meeting.

**Format**
- An informative exam before and after the summer school covering the main course contents evaluate and document the learning experience.
- The educational programme consists of different modules. Besides interactive lectures in the lecture rooms, the Schools offer workshops to get an insight into specific clinical practice, ward rounds and skills training. The e-learning module of the Vienna Summer School on Oncology (VSSO), consisting of problem based and a virtual tumour board, encourages the students to gain and share their oncological knowledge under the supervision of experienced tutors.
- Classical lectures in the morning on general aspects of cancer. The topics will include an overview on biological background, diagnostic approaches (mainly clinical pathology and modern image modalities), clinical issues and psycho-oncology. Medical, radiation and surgical oncologists, radiologists, medical physicists, psycho-oncologists, physicists and radio-biologists give lectures. Workshops in the afternoon offer more practical training, such as case presentations, poster presentation, laboratory and ward rounds.
- The afternoon will offer two different tracks:
  - A clinically oriented track (T1) to get familiar with oncology care in practice and learn about oncology related problems. The students will have the possibility of ward and clinic rounds, further lectures in end of life communication, skills training etc.
  - A research oriented track (T2) is to introduce various exciting aspects of translational oncology research.
- An informative exam is organised before and after the summer school covering the main course contents to evaluate and document the learning experience.
- Most of the evenings will have a broad and lively social programme.

**Practicalities**
- Max 35 participants.
- Fee: 630 € includes registration and board and lodging during the course (Groningen edition).
- All students are requested to send an abstract beforehand with an oncologic topic related to cancer and cancer care in their home country / institution (T1) or related to a clinical, preclinical or translational research subject related to oncology (T2). The preparation of the abstracts should be supervised by a faculty member at the home medical school of the students.
- T1 students are asked to present a poster on the topic of their abstract and the T2 students to give a short presentation on the research topic. All abstracts, posters and presentations will be reviewed and rated by the faculty members from the organising Centre. The best abstract, poster and presentation will be awarded and students receive a prize, a certificate and selected benefits for their further development.

**References**

**Organising Centre**
- Groningen, The Netherlands

**The date**
- 4 - 15 July 2016
- Groningen, The Netherlands
ESO-ESSO-ESTRO
MULTIDISCIPLINARY COURSE IN ONCOLOGY
FOR MEDICAL STUDENTS

29 August - 9 September 2016
Poznan, Poland

ESO (European School of Oncology), ESSO (European Society of Surgical Oncology) and ESTRO (European Society for Radiotherapy and Oncology) are very keen to jointly organise a multidisciplinary course in oncology for medical students.

TARGET GROUP
• The course is offered to medical students who have completed their fourth year of studies at the time of the course.
• Participation will be limited to 24 students who will be selected through a competitive application process.

COURSE AIM
The key goal of this course is to encourage medical students to specialize in an oncology related discipline. Previous editions organised since 2005 received very positive and enthusiastic feedback from the students who had spent two weeks over summer with experienced teachers to obtain theoretical and practical training in cancer care.

The multidisciplinary course in oncology will provide an insight into all aspects of oncology with both theoretical and practical sessions. The programme incorporates plenary sessions, case study presentations, daily special visits to various oncology departments and group course projects that must be finalised and presented at the end of the course.

The course has been designated for European Credit Transfer and Accumulation System Credits (ECTS).

LEARNING OUTCOMES
By the end of this course participants should:
• Have a comprehensive understanding of all aspects of oncology
• Have an understanding of the complexity and importance of the multidisciplinary approach to cancer treatment
• Prepare a specific topic related to the theoretical and/or practical sessions and present it to plenary audience.

COURSE FORMAT
• Ten working days
• The programme covers all aspects of oncology
• Theoretical plenary sessions of maximum 2 hours
• Case presentations
• Daily two-hour practical sessions in small groups (labs, ward visits, etc)
• Preparation in small working groups of a presentation on a specific topic under the supervision of a teacher.
• The last day will be devoted to the project presentations delivered by the students (compulsory)
• Students are requested to bring their laptops to the course
• The official language is English - students must be fluent in English.

EDUCATIONAL COMMITTEE
Jan Vermorken, Medical Oncologist, Antwerp University Hospital, Antwerp (BE)
Nicholas Pavlidis, ESO Representative, School of Medicine University of Ioannina, Greece (GR)
Richard Pötter, ESTRO Representative, Medical University of Vienna, Vienna (AT)
Sergio Sandruzzi, ESSO representative, Università degli Studi di Torino, Turin (IT)

FACULTY
Batura-Gabryel H., Pulmonologist, Poznan University of Medical Sciences, Poznan (PL)
Colta Sz., Pulmonologist, Poznan University of Medical Sciences, Poznan (PL)
De Grève J., Medical Oncologist, UZ Brussels (VUB), Brussels (BE)
Flechtner H.H., Psychiatrist, Universitätsklinik für Psychiatrie, Psychotherapie und Psychosomatik, der Otto-von-Guericke-Universität Magdeburg, Magdeburg (DE)
Golusinski W., Laryngologist, Greater Poland Cancer Center, Poznan (PL)
Komarnicki M., Hematologist, Poznan University of Medical Sciences, Poznan (PL)
Mádry R., Gynaecological Oncologist, Poznan University of Medical Sciences, Poznan (PL)
Markowska J., Gynaecological Oncologist, Poznan University of Medical Sciences, Poznan (PL)
Milecki P., Radiation Oncologist, Poznan University of Medical Sciences, Poland, Greater Poland Cancer Centre, Poznan (PL)
Moczko J., Statistician, Poznan University of Medical Sciences, Poznan (PL)
Morawa D., Surgical Oncologist, Greater Poland Cancer Centre, Poznan (PL)
Nowak J., Geneticist, Polish Academy of Sciences (PL)
Rózkowski K., Medical Oncologist, Poznan University of Medical Sciences, Poznan (PL)
Sandruzzi S., Surgical Oncologist, Università degli Studi di Torino, Turin (IT)
Schröders D., Medical Oncologist, Antwerp University Hospital, Antwerp (BE)
Senkus-Konekla E., Radiation Oncologist, Medical University of Gdańsk, Gdańsk (PL)
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Valli M., Radiation Oncologist, San Giovanni Hospital, Bellinzona (CH)
Vermorken J., Antwerp University Hospital, Antwerp (BE)
Wachowiak J., Pediatrician, University of Medical Sciences, Poznan (PL)

LOCAL ORGANISERS
Britta Madry, Poznan University of Medical Sciences, Poznan
Janina Markowska, Poznan University of Medical Sciences, Poznan

APPLICATION
The application deadline is 10 May 2016
The application procedure consists of 4 steps:
• Complete the application form, scan it and mail it back to the ESTRO School (education@estro.org) before the deadline of 10 May 2016, together with
• A short CV (max 1 page) describing your education and indicating level of spoken English
• A motivation letter explaining why you wish to attend the course
• Wait for the outcome of the selection process – you will be notified at the latest by 31 May 2016.

PRACTICALITIES
• Selected participants will benefit from free registration, lunches and accommodation
• Arriving late for the start of the course or leaving early at the end are not acceptable. To receive course credit, attendance throughout the entire session is required
• The course will start on Monday 29 August 2016 at 09:00 and end on Friday 9 September 2016 at 17:00.
• Participants should arrive on Sunday 28 August 2016 in the afternoon; a welcome reception will be organised by the host institute in the evening
• A visit to the city of Poznan is scheduled during the course and the course closes with a farewell party.

COURSE COORDINATION
ESTRO School, Brussels, Belgium
Tel.: +32 2 775 93 39 – Fax: +32 2 779 54 94
E-mail: education@estro.org

The organising societies are grateful to EMSA – European Medical Students’ Association for their cooperation in the promotion of the course.
### POSTGRADUATE COURSES IN EUROPE

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</tbody>
</table>

### POSTGRADUATE COURSES OUTSIDE EUROPE

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Date</th>
<th>Location</th>
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<tbody>
<tr>
<td>ADVANCED SKILLS IN MODERN RADIOTHERAPY</td>
<td>19 - 23 June 2016</td>
<td>Dublin, Ireland</td>
</tr>
<tr>
<td>MULTIDISCIPLINARY MANAGEMENT OF HEAD AND NECK ONCOLOGY</td>
<td>26 - 29 June 2016</td>
<td>Florence, Italy</td>
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<td>HAEMATOLOGICAL MALIGNANCES</td>
<td>1 - 3 September 2016</td>
<td>Vienna, Austria</td>
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<tr>
<td>PALLIATIVE CARE AND RADIOTHERAPY</td>
<td>4 - 8 September 2016</td>
<td>Toronto, Canada</td>
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<tr>
<td>MULTIDISCIPLINARY MANAGEMENT OF BREAST CANCER</td>
<td>18 - 22 May 2016</td>
<td>Tokyo, Japan</td>
</tr>
<tr>
<td>MULTIDISCIPLINARY MANAGEMENT OF LUNG CANCER</td>
<td>26 - 30 June 2016</td>
<td>Moscow, Russia</td>
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<td>PHYSICS FOR MODERN RADIOTHERAPY</td>
<td>9 - 13 September 2016</td>
<td>Cambridge, UK</td>
</tr>
<tr>
<td>BASIC TREATMENT PLANNING</td>
<td>16 - 18 September 2016</td>
<td>Cambridge, UK</td>
</tr>
<tr>
<td>ADVANCED TREATMENT PLANNING</td>
<td>18 - 22 September 2016</td>
<td>Florence, Italy</td>
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<tr>
<td>IMAGING FOR PHYSICISTS</td>
<td>20 - 22 September 2016</td>
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</tr>
<tr>
<td>COMPREHENSIVE QUALITY MANAGEMENT IN RADIOTHERAPY - RISK MANAGEMENT AND PATIENT SAFETY</td>
<td>2 - 4 October 2016</td>
<td>Angers, France</td>
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<tr>
<td>BIOLOGICAL BASIS OF PERSONALISED RADIATION ONCOLOGY</td>
<td>17 - 20 October 2016</td>
<td>Montpellier, France</td>
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<tr>
<td>IMAGE-GUIDED AND ADAPTIVE RADIOTHERAPY IN CLINICAL PRACTICE</td>
<td>25 - 27 October 2016</td>
<td>Madrid, Spain</td>
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<td>BEST PRACTICE IN RADIATION ONCOLOGY – A WORKSHOP TO TRAIN RTT TRAINERS</td>
<td>30 - 1 November 2016</td>
<td>Athens, Greece</td>
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<td>ESNS ESTRO MULTIDISCIPLINARY APPROACH TO CANCER IMAGING</td>
<td>10 - 12 November 2016</td>
<td>Amsterdam, The Netherlands</td>
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<tr>
<td>ACCELERATED PARTIAL BREAST IRRADIATION</td>
<td>13 - 16 November 2016</td>
<td>Paris, France</td>
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<tr>
<td>4TH ESNS-ESTRO MASTERCLASS IN RADIATION ONCOLOGY</td>
<td>19 - 23 November 2016</td>
<td>Prague, Czech Republic</td>
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### UNDERGRADUATE COURSES

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<tr>
<td>MEDICAL SCIENCE SUMMER SCHOOL FOR MEDICAL STUDENTS</td>
<td>26 - 30 July 2016</td>
<td>Stavanger, The Netherlands</td>
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<tr>
<td>ESNS-ESOR/ESTRO MULTIDISCIPLINARY COURSE IN ONCOLOGY FOR MEDICAL STUDENTS</td>
<td>20 - 23 November 2016</td>
<td>Prague, Czech Republic</td>
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### LIVE TEACHING COURSES IN EUROPE

#### MULTIMODAL CANCER TREATMENT - GENERAL
- CANCER SURVIVAL (ECP (SSS))
- COMBINED MODALITY APPLIANCE TREATMENT: BIOLOGICAL BASES, CURRENT APPLICATIONS AND PERSPECTIVES
- PALLIATIVE RADIOTHERAPY

#### MULTIMODAL CANCER TREATMENT - SITE SPECIFIC
- MULTIDISCIPLINARY MANAGEMENT OF BREAST CANCER
- MULTIDISCIPLINARY MANAGEMENT OF BRAIN TUMOURS
- MULTIDISCIPLINARY MANAGEMENT OF LUNG CANCER
- MULTIDISCIPLINARY MANAGEMENT OF HEAD AND NECK ONCOLOGY

#### RT TREATMENT, PLANNING AND DELIVERY: EXTERNAL BEAM
- ADVANCED TREATMENT PLANNING
- NEW POSITIONING AND IMMOBILISATION FOR RADIATION THERAPY
- ADVANCED SKILLS IN MODERN RADIOTHERAPY
- IMRT AND OTHER CONFORMAL TECHNIQUES IN PRACTICE
- IMAGE GUIDED RADIOTHERAPY IN CLINICAL PRACTICE
- CLINICAL PRACTICE AND IMPLEMENTATION OF IMAGE-GUIDED STEREOTACTIC BODY RADIOTHERAPY
- PARTICLE THERAPY

#### RT TREATMENT, PLANNING AND DELIVERY: BRACHYTHERAPY
- MODERN BRACHYTHERAPY TECHNIQUES
- BRACHYTHERAPY FOR PROSTATE CANCER
- IMAGE GUIDED RADIOTHERAPY AND CHEMOTHERAPY IN GYNAECOLOGICAL CANCER: FOCUS ON ADAPTIVE BRACHYTHERAPY

#### BIOLOGY
- BASIC CLINICAL RADIOBIOLOGY
- IMAGE GUIDED RADIOTHERAPY AND CHEMOTHERAPY IN GYNAECOLOGICAL CANCER: FOCUS ON ADAPTIVE BRACHYTHERAPY

#### RESEARCH
- QUANTITATIVE METHODS IN RADIATION ONCOLOGY: MODELS, TRAILS AND CLINICAL OUTCOMES
- RESEARCH MASTERCLASS IN RADIATION PHYSICS

### LIVE TEACHING COURSES OUTSIDE EUROPE

#### AUSTRALIA - BASIC CLINICAL RADIOBIOLOGY
#### CHINA - MULTIDISCIPLINARY MANAGEMENT OF PROSTATE CANCER
#### INDIA - IMAGE GUIDED RADIOTHERAPY AND CHEMOTHERAPY IN GYNAECOLOGICAL CANCER: FOCUS ON ADAPTIVE BRACHYTHERAPY
#### RUSSIA - ADVANCED TECHNOLOGIES
#### SINGAPORE - MULTIDISCIPLINARY MANAGEMENT OF HEAD AND NECK ONCOLOGY
#### SOUTH KOREA - MULTIDISCIPLINARY MANAGEMENT OF GI CANCER

#### BASIC MEDICAL COURSES IN ONCOLOGY
- ESNS-ESTRO MULTIDISCIPLINARY COURSE IN ONCOLOGY FOR MEDICAL STUDENTS
ESTRO online educational resources and tools

FALCON Fellowship in Anatomic deLineation and CONtouring

FALCON is the ESTRO contouring platform aimed at improving the delineation skills of the radiation oncology community, and at contributing to a better treatment planning of cancer patients treated with radiotherapy.

The purpose of FALCON is to provide interactive teaching in tumour, target and OAR contouring.

LIVE COURSES AND WORKSHOPS

ESTRO started implementing FALCON in its live teaching in 2010. Since then FALCON has been used in 50 clinically oriented and/or image focused live courses and 35 hands-on delineation workshops at annual ESTRO meetings. More than 4000 radiation oncology professionals have benefited from such interactive training.

ONLINE WORKSHOP

In 2012, ESTRO organised the first online FALCON workshop. Online workshops can include 20-30 participants and are conducted through web-conferences in a time span of three weeks. The sessions are very interactive and offer the opportunity to compare delineations from participants and experts and discuss the interobserver variability and the available guidelines. The number of online workshops was gradually increased and in 2015, a full annual programme of eight workshops on different tumour sites (breast, prostate, gynaecology, head and neck, organs at risk and paediatric oncology) was available for radiation oncology professionals to participate worldwide.

DATABASE OF ONLINE CASES

Furthermore, a database of online cases delineated by experts is being developed for individual training. These cases will be accessible through DOVE (see next page) to the ESTRO community.

A limited number of cases are always available (free) to ESTRO members. Institutes, (national) societies and groups can purchase an annual license giving access to the full database of ESTRO course contouring cases or to use the FALCON platform for contouring cases they provide themselves. For more info please contact Miika Palmu, ESTRO Project manager at mpalmu@estro.org.

FALCON IN 2016

- Fourteen live courses to include delineation exercises: the FALCON logo appears at the bottom of these course descriptives, in the live courses section of this guide.
- Eight live FALCON workshops planned prior and during ESTRO 35 in Turin. See p 141.
- A full annual programme of online FALCON workshops open for registration to participants worldwide which can be consulted on www.estro.org
- Blended learning with FALCON: integration of online contouring learning in live courses with pre- and post-contouring exercises
- Expanded number of cases delineated by experts for individual exercise or to be used by institutes and groups. Please consult us about different options and licenses: mpalmu@estro.org
- Further development of contouring guidelines for different tumour sites
- Services to clinical trials to increase homogeneity in tumour delineation.
DOVE
Online library of peer-reviewed, up-to-date information for radiation oncology professionals

The ESTRO DOVE e-library currently contains about 11,000 scientific and/or educational publications.

Through a single logon, you can access ESTRO resources such as:
- +/- 1,000 congress webcasts
- +/- 1,000 congress posters
- +/- 5,000 conference abstracts
- all Green Journal articles
- more than 70 (ESTRO) guidelines
- The ESTRO and Public Affairs newsletters
- Information on around 20 EU projects involving ESTRO
- Free ESTRO FALCON endorsed cases
- NEW IN 2016: ESTRO live course material

A POWERFUL SEARCH ENGINE
For easy retrieval of required educational material, the e-library offers a powerful search engine based on the MeSH thesaurus. You can refine your search by including subject, time and format filters and DOVE allows you to save, print and email the selected material.

ACCESS TO DOVE
Anyone can access the service library and view the content; full access depends on ESTRO membership status or participation in ESTRO activities.

EGLO
ESTRO Global Learning Object

EDUCATIONAL PACKAGES ON SPECIFIC TOPICS
ESTRO started to develop online teaching modules a few years ago. Having the possibility now through DOVE to offer direct access to a wealth of high quality information, the Society plans to produce more learning packages, the so-called EGLO’s, grouping educational material on specific topics.

CONTENT OF AN EGLO
An EGLO usually consists of 10 items, e.g.:
- 3 webcasts
- 3 articles from the Green Journal
- 1 guideline
- 2 posters
- 1 delineation exercise
These items are combined with a test (MCQ) to be taken at the start and at the end.

FROM DOVE TO LIVE COURSES
In the future, EGLOs will be developed to contribute to blended learning programmes supporting the ESTRO live courses and will allow participants to prepare for the course beforehand or deepen their knowledge at the end of the course.

The DOVE search engine is accessible directly from the homepage of www.estro.org.

EGLO: learning packages to be developed on DOVE to support ESTRO live courses.
REGISTRATION FEES FOR TEACHING COURSES

<table>
<thead>
<tr>
<th></th>
<th>EARLY RATE</th>
<th>LATE RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>In training members*</td>
<td>450 €</td>
<td>625 €</td>
</tr>
<tr>
<td>Members</td>
<td>600 €</td>
<td>725 €</td>
</tr>
<tr>
<td>Non Members</td>
<td>750 €</td>
<td>850 €</td>
</tr>
</tbody>
</table>

*Members with specialty radiation therapists (RTT) may register at the In training fee.

MEMBERSHIP
If you become a member of ESTRO, you will benefit from preferential rates when registering for teaching courses. Please note that in order to benefit from the members rate you must renew your membership for 2016 before registering for a 2016 teaching course. The membership renewal should be done at least three days before the early rate deadline. The membership internal processing and approval might take up to maximum three working days.

More information about membership on our website: www.estro.org/members.

REDUCED FEES
ESTRO members working in countries with a less competitive economic background can obtain a reduced registration fee of 350€ to participate in live teaching courses organised in Europe. If they are selected, these ESTRO members will only pay 350€ to register for the course. This reduced fee will be granted to maximum 500 participants per year.

See on p 126 the selection criteria and the eligible countries and courses.

HOW TO REGISTER TO AN ESTRO COURSE

You have an ESTRO user name and password
- Go to www.estro.org
- Under ‘School’ then ‘Live Course’, select the course of your choice from the list of courses
- Click on the ‘Registration and fees’ button

You must click in the box to agree that you have read and understood the paragraph regarding renewal of membership / becoming a member.
- Enter your user name and password again and click on ‘Login’.
- Provide the correct invoicing address where you would like to receive your invoice and click on ‘Submit invoice address’. If you need a VAT invoice, choose your professional address (VAT registered) and fill in the VAT number.
- Check that your participant details and invoice address are correct. If they are incorrect or you wish to change them, click on the edit button and follow the steps. Please make sure your invoice details are correct as modifications will not be available.
- If your addresses are correct, click on ‘Next step’ to continue.
- For individual payments, only payments by credit card are accepted.
- For group registration and third party registration, please contact ESTRO Office.
- On the overview page, check your details and the products that you have chosen to register for. If they are incorrect, use the ‘Previous step’ button to go backwards.
- Tick the box accepting the ESTRO terms and conditions and click on the submit button.
- You will be directed to a secure credit card payment site where you have to fill in your credit card details (www.ogone.be).
- The last page is the registration acknowledgment page. Additionally you will receive:
  - an email confirming that ESTRO has received your registration
  - a confirmation letter upon reception of payment for the course fees.

You don’t have an ESTRO user name and password
- On the homepage of the ESTRO website (www.estro.org) go to the blue box in the bottom right hand corner and click on ‘Create an account’.
- Follow the steps and a login and password will be sent to your e-mail address.

You have lost your password but still know your ESTRO user name
- On the homepage of the ESTRO website (www.estro.org) go to the blue box in the bottom right hand corner and click on ‘Lost password’. Fill in your user name. A new password will be sent to your e-mail address within a few minutes.

CANCELLATION POLICY
In case of cancellation, a full refund of the registration fee minus 15% for administrative costs can be obtained up to three months before the course start date. A 50% refund of the registration fee minus 15% for administrative costs can be obtained up to one month preceding the course start date. No refund will be made if the cancellation request is postmarked less than one month before the start of the course.

HOW TO REGISTER SOMEBODY ELSE TO AN ESTRO COURSE?
Follow the steps in “How to register to an ESTRO course” and change the participant details to the person who is actually attending the event.

If you have more than one person to register, contact the ESTRO office.

If you encounter any problems please contact ESTRO School at education@estro.org.

CERTIFICATES OF ATTENDANCE
The certificates are available onsite upon completion of the course. A PDF version can be obtained by contacting the ESTRO office at education@estro.org up to three years later.

EXHIBITION
A commercial exhibition is organised during live ESTRO courses and includes companies manufacturing radiation therapy equipment, pharmaceutical industry as well as medical publishers. For them, various sponsoring and advertising opportunities are available.

Interested companies and publishers may obtain more detailed information from:
Valérie Cremades
Corporate Relations Manager
Tel: +32 2 775 93 42
Fax: +32 2 779 54 94
E-mail: valerie.cremades@estro.org
3.2 PUBLICATIONS

Educational Publications

ESTRO (PHYSICS) BOOKLETS
With the support of Europe Against Cancer and the International Atomic Energy Agency
Available through DOVE

- Booklet No 1, 2nd edition
  Methods for in vivo Dosimetry in External Radiotherapy
  By J. Van Dam and G. Marinello

- Booklet No 2
  Recommendations for a Quality Assurance Programme in External Radiotherapy
  By P. Aletti and P. Bey

- Booklet No 3
  Monitor Unit Calculation for High Energy Photon Beams
  By A. Dutreix, B.E. Bjärngard, A. Bridier, B. Mijnheer, J.E. Shaw, H. Svensson

- Booklet No 4
  Practical Guidelines for the Implementation of Quality System in Radiotherapy

- Booklet No 5
  Monitor Unit Calculation - For High Energy Photon Beams - Practical Examples
  By B. Mijnheer, A. Bridier, C. Garibaldi, K. Torszok, J. Venselaar

- Booklet No 6
  Quality Assurance of Treatment Planning Systems - Practical Examples for non-IMRT Photon Beams
  By B. Mijnheer, A. Olszewka, C. Fiorino, G. Hartmann, T. Knoos, J.C. Rosenwald, H. Welieweerd

- Booklet No 7
  A Practical Guide to Quality Control of Brachytherapy Equipment
  By J. Venselaar and J. Pérez-Calatayud

- Booklet No 8
  Guidelines for the Verification of IMRT
  By B. Mijnheer and D. Georg

- Booklet No 9
  Individual Dose Calculations Concept and Models
  By M. Karlsson, A. Ahnesjö, D. Georg, T. Nyholm, J. Olofsson

- Booklet No 10
  Dosimetry with Diodes in External Radiotherapy with Photon Beams (Entrance Dose)

- Booklet No 11
  A Practical Guide to Quality Control of Brachytherapy Equipment
  By J. Venselaar and J. Pérez-Calatayud

- Booklet No 12
  Quality Assurance in Radiotherapy
  By B. Mijnheer, A. Olszewka, C. Fiorino, G. Hartmann, T. Knoos, J.C. Rosenwald, H. Welieweerd

- Booklet No 13
  Guidelines for the Verification of IMRT
  By B. Mijnheer and D. Georg

- Booklet No 14
  Individual Dose Calculations Concept and Models
  By M. Karlsson, A. Ahnesjö, D. Georg, T. Nyholm, J. Olofsson

- Booklet No 15
  Dosimetry with Diodes in External Radiotherapy with Photon Beams (Entrance Dose)

Practical Radiotherapy Planning 4th Edition
By A. Barrett, J. Dobbs, S. Morris, T. Roques

Basic Clinical Radiobiology
4th Edition
By M. Joiner and A. Van der Kogel

The GEC ESTRO Handbook of Brachytherapy
By A. Gerbaulet, R. Pötter, J.J. Mazeron, H. Meertens, E. Van Limbergen
Supported by Nucletron, Oncura and Varian

Multidisciplinary Management of Rectal Cancer
By V. Valentini, H.J. Schmoll, C.J.H. Velde

NEW EDITION ONGOING.
Some chapters are available on DOVE:
- Radiophysics
- Radioprotection
- Urinary bladder cancer
- Prostate cancer
- Anorectal cancer

TIGER Project
Tutorial for Image Guided External Radiotherapy
A radiotherapic oriented solution to the problem of teaching the axial human anatomy by promoting comparison between highly detailed anatomical sections by the Visible Human Project of National Library of Medicine, with CAT scan images, training in contouring outlines of anatomic structures and finally evaluation of individualised tutorial programmes.
Demo version and information www.estro.org (click on ‘Education’ and then ‘E-learning’)

Hand-outs published for teaching courses
The presentations of the teachers are available for all teaching courses participants in DOVE from www.estro.org.
3.3 ESTRO GRANTS

ESTRO Mobility Grants
Also called ESTRO Technology Transfer Grants (TTG)

ESTRO Mobility Grants (ESTRO Technology Transfer Grants, TTG) are for you if you want to visit another institute to learn about or gain experience with a technique, equipment or its application that is not easily available in your own institute and which would be useful to you and your department in future studies or clinical treatments.

TARGET GROUP
ESTRO members who are specialists or trainee radiation oncologists, radiation physicists, radiation therapists (RTTs) or biologists are all eligible for TTGs.
In addition to individual applications, ESTRO encourages teams of physicists or oncologists together with radiation therapists to apply together, where appropriate.
Although TTGs are primarily aimed at people in a relatively early stage of their career, many exceptions are made for more senior professionals who wish to learn a specific technique or application.

SCOPE
- ESTRO will cover travel and accommodation for a visit to another institute with the expertise or technique to be learned
- Salaries will not be covered
- Visits of one to three weeks
- Total budget of 1,500€ - 2,000€ per project (max 2,500€)
- The term “Technology Transfer” can be broadly interpreted but the main idea is to facilitate exchange of expertise or technical know how between institutes.

ESTRO BUDGET
A yearly budget of 50,000€ is available for these grants.

APPLICATION FOR TTG
- Two application deadlines occur per year (spring and autumn) and are announced on the website of ESTRO (under the top tab "Careers & Grants"), as well as by ESTRO Flash reminders.
- Application forms are available on the website and the following information is required:
  - a short, clear description of the project aim and methodology
  - indication of the likely benefit of the visit to the applicant and their institute
  - letters of support from the applicant’s department head and from the host institute
  - a short CV of the applicant(s) and cost estimates
  - after the visit, a 2-page report should be sent to the ESTRO office within one month of completion (these reports will be posted on the ESTRO website).

EVALUATION METHODOLOGY
Applications are submitted twice per year and evaluated by a panel of four-five members of the Education and Training Committee including at least one clinician, physicist, radiation therapist and biologist.
All applications are scored according to:
- Suitability and likely benefit to the applicants and their home institute.
- Clarity and feasibility of the aims of the visit and methodology described.

These ranking scores are used to assign priority for funding within the available budget.
Applications judged to have potential merit but lacking in focus or methodological details are returned with advice on how to modify and resubmit the application.

EVALUATION PANEL
Fiona Stewart, Biologist
Michelle Leech, Radiation Therapist
Håkan Nyström, Physicist
Sofia Rivera, Radiation Oncologist
Pedro Carlos Lara Jimenez, Radiation Oncologist

Applicants according to discipline (may include more than one applicant per proposal)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>RADIATION ONCOLOGIST</th>
<th>PHYSICIST</th>
<th>RTT</th>
<th>BIOLOGIST</th>
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<td>2014</td>
<td>37</td>
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<td>6</td>
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<td>72</td>
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<tr>
<td>2015 (1st semester)</td>
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<td>5</td>
<td>4</td>
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<tr>
<td>Total</td>
<td>183</td>
<td>133</td>
<td>46</td>
<td>8</td>
<td>370</td>
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ESTRO Educational Grants

ESTRO In training members can benefit from educational grants to participate in teaching courses. These grants are commercially supported.

**SELECTION CRITERIA**

- These grants are specifically meant for young ESTRO members who are still in training or have not yet achieved a permanent staff position and are unable to register to a course without financial support
- To be eligible for a travel grant, membership dues for the current year should be paid in advance
- Candidates should submit a curriculum vitae and a recommendation letter from their department head stating that financial support is essential for the candidate to enable her/him to attend the course
- The amount of each grant is of 750€ from which the early in-training registration fee is deducted.

**SUPPORTING COMPANY**

10 grants are supported by Varian.

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Funding rates

<table>
<thead>
<tr>
<th>YEAR</th>
<th># PROPOSALS</th>
<th># FUNDED</th>
<th>% FUNDED</th>
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<td>52</td>
</tr>
<tr>
<td>2015 (1st semester)</td>
<td>27</td>
<td>12</td>
<td>44</td>
</tr>
</tbody>
</table>

Main reasons for rejection:
- Aims too broad and unfocused
- Poor methodology
- Topic or host institute not appropriate
- Too commercial
- Priority score too low for funding.

DEADLINES: 30 APRIL AND 31 OCTOBER 2016

All applications should be addressed to grants@estro.org
3.4 REDUCED FEES FOR 2016 COURSES

ESTRO members working in countries with a less competitive economic background can obtain a reduced registration fee of 350€ to participate in live teaching courses organised in Europe. If they are selected, these ESTRO members will only pay 350€ to register for the course. This reduced fee will be granted to maximum 500 participants per year.

SELECTION CRITERIA
- Only ESTRO members for 2016 are eligible (hereunder is the list of eligible countries)
- Only one course per person per year can be granted
- Max 250 participants can register at the reduced fee in the first semester of 2016 and another 250 in the second semester of 2016
- In case the number of applications exceeds the number of places available at reduced fees, priority will be given to the younger members
- members applying for a course held in their region
- Non-European members need to contact ESTRO office to check eligibility.

Important note: sponsored candidates are not entitled to reduced fees.

HOW TO APPLY
Applications forms and CV for the reduced fees need to be submitted to the ESTRO Office – Education Department by email at education@estro.org.

LIST OF ELIGIBLE COUNTRIES
- All specialties: Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Poland, Portugal, Romania, Russian Federation, Serbia, Slovak Republic, Slovenia, Spain, Ukraine, Turkey
- RTTs and physicists only: Cyprus
- RTTs only: Italy

COURSES ELIGIBLE FOR REDUCED FEES

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<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Course Title</th>
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<tr>
<td>27 Feb - 2 March</td>
<td>Budapest, Hungary</td>
<td>BASIC CLINICAL RADIOBIOLOGY</td>
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<tr>
<td>6 - 10 March</td>
<td>Utrecht, The Netherlands</td>
<td>DOSE MODELLING AND VERIFICATION FOR EXTERNAL BEAM RADIOTHERAPY</td>
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<tr>
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<td>Florence, Italy</td>
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<td>London, UK</td>
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<td>10 - 13 April</td>
<td>Barcelona, Spain</td>
<td>TARGET VOLUME DETERMINATION</td>
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<td>22 - 26 May</td>
<td>Istanbul, Turkey</td>
<td>MULTIDISCIPLINARY MANAGEMENT OF PROSTATE CANCER</td>
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<tr>
<td>25 - 27 May</td>
<td>Brussels, Belgium</td>
<td>LOWER GI: TECHNICAL AND CLINICAL CHALLENGES FOR RADIATION ONCOLOGISTS</td>
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<tr>
<td>28 - 31 May</td>
<td>Brussels, Belgium</td>
<td>UPPER GI: TECHNICAL AND CLINICAL CHALLENGES FOR RADIATION ONCOLOGISTS</td>
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<td>29 May - 1 June</td>
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<td>Athens, Greece</td>
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<td>Florence, Italy</td>
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<td>Vienna, Austria</td>
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<td>Avignon, France</td>
<td>COMPREHENSIVE QUALITY MANAGEMENT IN RADIOTHERAPY - RISK MANAGEMENT AND PATIENT SAFETY</td>
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<td>Madrid, Spain</td>
<td>IMAGE GUIDED RADIOTHERAPY IN CLINICAL PRACTICE</td>
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<td>Amsterdam, The Netherlands</td>
<td>ESTRO/ESOR MULTIDISCIPLINARY APPROACH OF CANCER IMAGING</td>
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<td>13 - 16 November</td>
<td>Paris, France</td>
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4 ESTRO CONFERENCES

4.1 ESTRO CONFERENCES

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4.1
ESTRO CONFERENCES

ESTRO 35
29 April - 3 May 2016 | Turin, Italy

4TH GEC-ESTRO WORKSHOP
Autumn 2016 | Brussels, Belgium
ESTRO 35
29 April - 3 May 2016
Turin, Italy

DEADLINES
ESTRO and Company Awards: 16 October 2015
Abstract submission: 19 October 2015
Late breaking abstract submission: 31 January 2016
Early registration: 20 January 2016
Late registration: 29 March 2016
Desk registration: as of 30 March 2016

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events@estro.org
WWW.ESTRO.ORG
It is our privilege and great pleasure to invite you to ESTRO 35 that will take place from 29 April to 3 May 2016 in Turin, Italy.

ESTRO is an interdisciplinary society where radiation oncologists, medical physicists, biologists, brachytherapists and radiation therapists aspire to join forces with other organisations in the oncology field that share ESTRO’s vision of excellence in cancer treatment. At ESTRO 35, we draw attention to the multidisciplinarity and interdisciplinary components of our practice, with emphasis on the new opportunities that they represent for all professionals of oncology, not only in research but also in the daily care of patients.

The interdisciplinary component of the scientific programme will include sessions on the following topics:

- Adaptive radiotherapy for coping with anatomical variations: hope or hype?
- Adaptive radiotherapy based on functional / biological imaging / ART head and neck
- Dose painting
- Long term toxicity / cardiovascular
- How to select the right patients for proton therapy and collaborate in Europe?
- Protons or heavy ions?
- Quality beyond accuracy: are we failing to see the forest for the trees?
- Safety, standardisation, automatisation
- Hybrid imaging / MR-PET
- Combination radiotherapy and targeted agents
- Secondary cancer induction
- Quality assurance in clinical trials
- Hot topics in SBRT
- Radiomics
- Radiotherapy resistance, new concepts
- Personalised medicine
- Health Economics in Radiation Oncology (HERO)
- Communications with media / patients
- Advisory Committee on Radiation Oncology Practice (ACROP)
- Debate: In 2020 every patient will be treated with hypo-fractionation.

The multidisciplinary component of our profession will be highlighted in several joint sessions with other European and international oncology societies. The Scientific Programme Committee (SPC) and Scientific Advisory Groups (SAG) of ESTRO 35 are hard at work to develop the multidisciplinary component of the scientific programme.

The educational aspects of ESTRO 35 will include pre-meeting courses, contouring workshops and multidisciplinary tumour board sessions.

As in previous conferences, ESTRO 35 will offer a Young Scientists Track. This track is fully organised by our young members and it enables them to meet young colleagues, share common interests, network and start to build their own collaborative projects at an international level.

Last but not least, the ESTRO annual meeting has developed into a successful scientific event due to high level contributions via abstract submissions. The Scientific Programme Committee is committed to offering large visibility to promising abstracts by including them in the scientific symposia or via dedicated poster viewing sessions. We therefore strongly encourage you to take note of the abstract submission deadline and to send your abstracts in due time.

All of the leading industry partners will contribute to ESTRO 35, Europe’s largest industrial exhibition in radiation oncology, offering the opportunity to view the latest products and services in cancer treatment and cancer care.

Stay tuned for more information coming soon. We look forward to welcoming you in Turin.

With warm regards,
PRE-MEETING COURSES

CLINICAL PRE-MEETING COURSE
Re-irradiation: background, state-of-the-art and perspectives

FRIDAY 29 APRIL 2016
Course directors: N. Burnet (UK) and V. Valentini (IT)

Course Aim
To provide an update on background, state-of-the-art and perspectives of re-irradiation in clinical practice.

Learning objectives
• To assess the clinical effectiveness of re-irradiation in the different tumour sites
• To understanding the radiobiology and clinical background in tumour and normal tissue re-irradiation
• To identify patient and tumour characteristics helping to select tailored re-irradiation strategy
• To explain how biomarkers and concomitant therapies may (or may not) improve treatment stratification and outcomes
• To understand the role of modern technology in re-irradiation approaches
• To compare and understand limitations of alternative treatments compared to re-irradiation.

Who should attend?
Radiation oncologists, senior residents and radiobiologists who are interested in learning and improving their knowledge in re-irradiation background, state-of-the-art and perspectives.

Content
Session 1: Background
• Normal tissue tolerance constrains to re-irradiation
• The issue of volumes, fractionation and total dose in the perspective of modern radiotherapy
• Possibility to increase therapeutic ratio with sensitisers, cytotoxic drugs, targeted agents, hyperthermia.

Session 2: State-of-the-art in:
• Brain tumours
• Head and neck cancer
• Breast cancer.

Session 3: State-of-the-art in:
• Prostate cancer
• Rectal cancer
• Bone metastases.

Session 4: New perspectives
• Re-irradiation and modern imaging
• Re-irradiation and modern planning
• Re-irradiation and new beams
• Recommendation for the practice when you will be back in your hospital.

PHYSICS PRE-MEETING COURSE
Multidimensional dosimetry systems

FRIDAY 29 APRIL 2016
Course directors: D. Georg (AT) and J. van de Kamer (NL)

Course Aim
Dosimetry has always played a major role in the safe implementation of new treatment techniques and technologies (e.g. IMRT, VMAT, IMPT) and will continue to do so for upcoming and emerging treatment concepts (e.g. adaptive radiotherapy, dose painting and irradiation with MR linac hybrid systems). The course aim is to review existing and address future detectors for multidimensional and time resolved dosimetry including the underlying physical or chemical principle. The participants will learn the advantages and limitations, including uncertainties, of various systems when used in realistic, modulated dose distributions. Additionally, the participants will be provided with insight in the complexity of dosimetric comparisons.

Learning objectives
Upon completion of the course, successful learners will be able to:
• Gain insight into principles of radiation detection
• Understand advantages and drawbacks of existing dosimetric systems
• Appreciate the importance of detector calibration and uncertainty analysis
• Assess current standards in multidimensional and time resolved dosimetry
• Assess needs and latest dosimetric developments for upcoming dose delivery techniques
• Understand the concepts of dosimetric analysis and comparison
• Appreciate the role of experimental dosimetric procedures in patient specific QA of treatment plans.

Who should attend?
The target group consists of medical physicists, medical physics assistants, dosimetrists and researchers who are interested in improving their knowledge of multidimensional dosimetric systems, their operational principles and their utilisation, including advantages and drawbacks and principles of dosimetric analysis. Although the course will also be of interest to graduate or senior scientists undertaking research related to dosimetry, research or scientific experience is not required.

Content
• 2D and 3D detectors for absorbed dose measurements (e.g. radiochromic films, arrays, EPID, scintillators, transmission detectors, gels, phantoms...)
• Emerging detectors multidimensional and/or time resolved dosimetry (e.g. deformable silicon dosimeter, scintillator detectors, calibration...)
• General aspects of (solid) phantoms supporting multidimensional dosimetry
• Detectors and phantoms for 4D/time resolved dosimetry
• Dosimetric aspects in magnetic fields
• Dosimetry for charged particle therapy
• Analysis of multidimensional dosimetric information
• Rationale, procedures and analysis of dosimetric patient specific pre-treatment QA.
Course Aim
Enable participants to understand the scientific and methodological principles associated with pre-clinical and clinical development of novel combinations of biological agents with radiotherapy, and raise awareness of key challenges as well as controversies in this rapidly evolving field.

Learning objectives
• To understand the range of current and emerging molecular targets, and the scientific rationale for combining radiotherapy with agents that act on these targets
• To appreciate the extent and quality of pre-clinical evaluation that is required before new agents can be safely and effectively combined with radiotherapy in the clinic
• To understand the principles of clinical trial methodology that are relevant to early phase testing of novel radiotherapy-drug combinations
• To become familiar with the concepts of patient selection and ‘umbrella’ trials in the context of radiotherapy-drug combinations
• To acquire a basic understanding of how imaging and molecular biomarkers can increase the value of clinical trials of novel radiotherapy-drug combinations.

Who should attend?
• Radiation oncologists, particularly those in the early stage of their career, who are keen to understand how the new generation of biological agents might be used to enhance radiotherapy outcomes
• Radiation biologists seeking information on how to maximise the clinical impact of their scientific discoveries
• Radiation physicists and radiation therapists (RTTs) looking for an overview and update of recent and ongoing developments in the field of radiotherapy-drug combinations.

Content
• Introduction and overview
• Current/emerging/rational targets
• Requirements for pre-clinical models and evaluation: in vitro, early in vivo, advanced in vivo
• Clinical trial design methodology: phase I, dose selection and dose escalation, umbrella and biomarker driven trials
• Biomarkers: molecular and imaging, patient selection, early response, predictive
• Lessons learned: examples from ongoing trials.
FRIDAY 29 APRIL 2016
Course directors: D. De Ruysscher (NL) and M. Schwarz (IT)

Course Aim
The improvement of lung radiotherapy is clinically needed as much as it is technically non-trivial. Several tools are available for imaging, planning and treatment delivery that can help achieve better treatments, as long as their use is guided by both a clear clinical perspective and an understanding of their possibilities and limitations.

The aim of the course is to identify bottlenecks and challenges in the optimal planning and execution of high-dose radiotherapy in lung cancer in daily practice and to discuss/propose solutions. At the same time, technical evolutions that will become available in the coming years will be discussed.

The course will leave plenty of time for interactions between the participants and the teachers.

Learning objectives
Upon completion of the course, participants should be able to:
- Know the current status of lung radiotherapy in terms of clinical results, prescription doses to the tumour and dose tolerance for the normal tissues
- Gain insight for revisiting their clinical practice concerning the whole treatment process of lung cancer patients
- Describe technical solutions for target delineation, treatment planning and motion management in lung cancer treatment
- Describe technical and clinical solutions for image guidance with cone-beam CT and adaptation in routine practice
- Describe at least a few future technical developments in radiotherapy of the lung.

Who should attend?
The target group consists of radiation oncologists, medical physicists and experienced radiation therapists (RTTs), who are interested in discussing and revisiting their knowledge and clinical practice in lung cancer treatment.

Content
- How to deal with anatomical and molecular imaging in planning
- Optimal delineation of GTV, CTV and OARs and the possible role of automatic contouring and atlases
- How to handle motion of the tumour and lymph nodes in preparation, planning and delivery
- Plan optimisation and dose calculation of high-dose treatments
- 3D and 4D CBCT matching in daily practice
- How to make adaptive schemes reality?
- Future perspectives
  - Particle therapy
  - Radiomics and genomics integration: feasible or a day dream?

CONTOURING WORKSHOPS

FALCON (Fellowship in Anatomic DeLineation and CONtouring) is the multifunctional ESTRO platform for contouring and delineation. Eight such workshops have been planned for ESTRO 35.

Programme
- Spine SBRT (NEW): Friday 29 April 2016 from 08:00-10:00 (repeated Saturday 30 April from 14:30-16:30)
- OAR for the upper abdomen: Friday 29 April 2016 from 10:30-12:30 (repeated Sunday 1 May from 14:30-16:30)
- Anal canal (NEW): Friday 29 April 2016 from 13:30-15:30 (repeated Monday 2 May from 14:30-16:30)
- Prostate cancer in the post-prostatectomy setting: Friday 29 April 2016 from 16:00-18:00 (repeated Tuesday 3 May from 08:30-10:30).

Target audience
The delineation workshops are aimed at all radiation oncology professionals who want to improve their contouring skills. Three types of cases are dedicated to radiation oncologists: a common case, a rare case and a more advanced case. The OAR case is especially targeted to radiation therapists (RTTs) and dosimetrists.

Structure of the workshops
- Presentation of the clinical case and the delineation exercise
- Explanation of the contouring software
- 20 minutes for the first delineation on site
- Presentation of the delineation guidelines
- 20 minutes for the second delineation on site
- Discussion between experts and participants.

Practical arrangements
- Participants should bring their own laptops
- Wifi and wired connection will be available
- Participants will be limited to 40 per workshop to keep a strong interactivity in the group.

About FALCON
FALCON workshops have been organised at ESTRO congresses since 2010 and have been growing steadily in popularity. Attending a FALCON workshop offers the opportunity for individual professionals to:
- Validate their contouring practice during live workshops by comparing them with those from experts and other participants
- Learn the indications proposed by the experts that coordinate the workshops
- Discuss with other participants, experts and panellists
- Communicate and use the delineation guidelines in order to further integrate them into daily practice.

Contouring Workshop Fees

<table>
<thead>
<tr>
<th></th>
<th>Initial Workshop</th>
<th>Additional Workshop</th>
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<tbody>
<tr>
<td>Student/In Training</td>
<td>75 €</td>
<td>25 €</td>
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<tr>
<td>Member</td>
<td>100 €</td>
<td>40 €</td>
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<tr>
<td>Non Member</td>
<td>150 €</td>
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</table>

*To register as a student you should be an ESTRO member and send a copy of your valid student card to events@estro.org before registering. Institute letters are not accepted.

**Members with specialty RTT may register at the In training fee.
**SCIENTIFIC PROGRAMME**

**SATURDAY 30 APRIL 2016**

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<th>08:00 - 08:40</th>
<th>08:45 - 10:00</th>
<th>11:00 - 12:30</th>
<th>12:30 - 14:30</th>
<th>14:30 - 15:45</th>
<th>17:30 - 18:15</th>
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<td>Technology assessment</td>
<td>CRISPR/CAS technology: from cells to mice to stem cell therapy</td>
<td>Partial breast irradiation: who, when and how?</td>
<td>TBC</td>
<td>Selection of patients for proton therapy</td>
<td>Mitigating normal tissue toxicity</td>
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MONDAY 2 MAY 2016

08:00 – 08:40
How to bring QUANTEC into the 21st century?
Shared decision making
Genetic models for cancer research
SBRT for oligometastatic disease

08:45 – 10:00
Adaptive radiotherapy for coping with anatomical variations:希望 vs. hype
Central guidance in radiotherapy for head and neck, patient data and new challenges
Active normal tissue models for cardiovascular disease from Head and Neck Symposium
Emerging biomarkers
The risk of cardiovascular disease after breast cancer treatment: the physician’s point of view
Predicting cardiac toxicity after breast irradiation: non-quantifiable data and new challenges
SBRT for oligometastatic disease
Combining SBRT and immunotherapy: a promising approach?
SBRT for metastatic disease: how far is this far and should we?
Abdominal pelvic targets

10:30 – 11:30
Modern ART based on functional biological imaging
Non-technical imaging for ART: biological issues and potential impact on clinical management
Adaptive radiation therapy by the example of breast and lung cancer: where are we now?
Dramatic benefit of replacing, where does the next treatment plan under a ARTFORCE project?
Secondary cancer after radiotherapy: from cancer registries to clinical implications
Secondary cancer risk: following from epidemiology studies
Modelling of secondary cancer risk: Clinical implications of secondary cancer risk in pediatric and adult patients
SBRT in lung - choices
To use or not to use the LQ model at “high” radiation doses

11:45 – 12:30
SELECTED RANDOMISED TRIALS

12:30 – 13:00
GENERAL ASSEMBLY

20:00
SOCIAL EVENING

20:00
TEACHING LECTURE
08:00 – 08:40
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TEACHING LECTURE
08:30 – 09:10
Teaching Lecture
The new ‘W’ in radiation biology

Teaching Lecture
Texture analysis of medical images

Teaching Lecture
Hypofractionation: physico-radiobiological and clinical aspects

Teaching Lecture
Non-small cell lung tumours – personalisation and treatment using radiolabelled peptides

09:15 – 10:30
Symposium
New concepts of tumour radiobiology

Symposium
Towards Personalised Radiation Oncology (PRO)

Symposium
Combining radiotherapy with modulators

Symposium
Combining radiotherapy with immunotherapy

11:00 – 12:00
Symposium
Combining radiotherapy with immunotherapy: the new ‘Rs’ in radiation biology

Symposium
Texture analysis of medical images: potential role for radiomics

Symposium
Integrative data analysis for PRO

Symposium
What are the limits of minimally invasive surgery?
ESTRO FINANCIAL SUPPORT AND AWARDS

AMBASSADOR SOLIDARITY FUND

The Ambassador Solidarity Fund is generously financed by part of the membership fee paid by the Supporting Ambassador members and enables sponsorship of individual In training membership and registrations to ESTRO 35 to assist radiation oncology professionals from European economically challenged countries. More information on: www.estro.org/members/individual-membership/supporting-ambassador

Twenty sponsored registrations (In training fee: 300€) and In training memberships (75€) are available for ESTRO 35.

Criteria for Eligibility
- Applicants should be below 35 years old
- Applicants should currently be in training
- Applicants should come from economically challenged European countries (eligible countries: Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Greece, Hungary, Italy, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Poland, Portugal, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Turkey, Ukraine) who are unable to register for ESTRO membership and ESTRO 35 without financial support

How to apply
Candidates should submit a curriculum vitae and a recommendation letter from their department head stating they are currently in training and that financial support is essential to register for membership and benefit from a sponsored registration to ESTRO 35.

Applications for the solidarity fund are to be addressed to:

ESTRO Office
Attn: Myriam Lybeer
Rue Martin V, 40
1200 Brussels, Belgium
Tel: +32 2 775 93 40 - Fax: +32 2 779 54 94
E-mail: mlybeer@estro.org

Deadline for submission: 16 October 2015

ESTRO MEMBERS FROM EMERGING COUNTRIES

ESTRO members from emerging countries can benefit from reduced registration fees to attend the conference. The list of eligible countries is defined according to the World Bank listing available at http://data.worldbank.org/about/country-and-lending-groups.

POSTER AWARDS

ESTRO sponsors four poster awards of 1,000 € each for a clinician, physicist, radiation therapist (RTT) and radiobiologist.

Criteria for selection
- Only abstracts accepted for poster presentation for ESTRO 35 will be considered for the award
- Posters are evaluated on (in decreasing order of importance): the scientific value of the data, the clarity of the presentation, and the visual quality of the poster layout.

How to apply
No application is needed. You are automatically considered if your abstract is accepted.

Prizes will be handed out at the Young Scientists Reception on Sunday 1 May 2016.

YOUNG SCIENTISTS POSTER AWARDS

ESTRO sponsors four young scientists poster awards consisting of a complimentary registration to a future ESTRO course for a clinician, physicist, radiation therapist (RTT) and radiobiologist.

Criteria for selection
- Only abstracts accepted for poster presentation for ESTRO 35 by authors under 40 years of age will be considered for the award
- Posters are evaluated on (in decreasing order of importance): the scientific value of the data, the clarity of the presentation, and the visual quality of the poster layout.

How to apply
No application is needed. You are automatically considered if your abstract is accepted.

Prizes will be handed out at the Young Scientists Reception on Sunday 30 April 2016.

ESTRO - JACK FOWLER UNIVERSITY OF WISCONSIN AWARD 2016

A prize of 1,000 € will be given for the best abstract in the field of radiation physics or radiation technology, submitted for ESTRO 35.

Criteria for Eligibility
- Candidates should be ESTRO members
- Candidates should be younger than 36. Exceptions will be made for female applicants who had to interrupt their research for pregnancy/maternity reasons; for them the maximum age is fixed at 40.

How to apply
Candidates should submit:
- A curriculum vitae
- A letter from their department head stating that the work has been done by the applicant
- A copy of the abstract on radiation physics or radiation technology which should have been submitted for ESTRO 35 (indicate abstract title and submitting author with your application).

Deadline to apply: 16 October 2015
COMPANY FINANCIAL SUPPORT AND AWARDS

ESTRO - ACCURAY AWARD

A prize of 10,000 € will be given to a radiotherapy professional for research in the field of “High Precision Radiotherapy”. Awardees should be qualified in the field of clinical radiotherapy, radiation physics, radiation technology or radiobiology.

Criteria for Eligibility

• Candidates should be ESTRO members, having completed the submitted work in the previous or current year
• Submissions should be brought forward by the candidates and may be work done as an individual piece of research or as a thesis complete in the field of biological, physical or clinical research
• Candidates should be younger than 36. Exceptions will be made for female applicants who had to interrupt their research for pregnancy/ maternity reasons; for them the maximum age is fixed at 40.

How to apply

Candidates should submit:
• A curriculum vitae and a list of publications
• A copy of the abstract on the project which should have been submitted for ESTRO 35 (abstract title and submitting author to be indicated with the application)
• A summary (in English) of their work (max two pages).

Candidates should also commit themselves to write an original paper in English on (part of) the scientific work carried out. This paper should be based on previously unpublished data and should be written according to the “Instructions to authors” of the Radiotherapy and Oncology Journal in which it will be published if accepted.

Deadline to apply: 16 October 2015

ESTRO - VARIAN AWARD

A prize of 7,500 € will be given to a radiotherapy professional for research in the field of radiobiology, radiation physics, clinical radiotherapy or radiation technology.

Criteria for Eligibility

• Candidates should be ESTRO members, having completed the submitted work in the previous year
• Submissions should be brought forward by the candidates or their department heads and may be work done as an individual piece of research or as a thesis complete in the field of biological, physical and clinical research
• Candidates should be younger than 36. Exceptions will be made for female applicants who had to interrupt their research for pregnancy/ maternity reasons; for them the maximum age is fixed at 40.

How to apply

Candidates should submit:
• A summary (in English) of their work (max two pages).
• A copy of the abstract on the project which should have been submitted for ESTRO 35 (abstract title and submitting author to be indicated with the application)
• A curriculum vitae and a list of publications

Candidates should commit themselves to write an original paper in English on (part of) the scientific work carried out. This paper should be based only on the data provided in the abstract and not on the presentation. It is advisable that you draft your abstract with extreme care, providing sufficient data for the evaluation by the jury.

Deadline to apply: 16 October 2015

ESTRO-ELEKTA BRACHYTHERAPY AWARD

By submitting a brachytherapy abstract for ESTRO 35, you are automatically being considered for the ESTRO-Elektta Brachytherapy Award. Abstracts accepted for oral presentation for the brachytherapy track of ESTRO 35 will be considered for the award.

Criteria for Eligibility

• Candidates should be ESTRO members, having completed the submitted work in the previous year
• Submissions should be brought forward by the candidates or their department heads and may be work done as an individual piece of research or as a thesis complete in the field of biological, physical and clinical research
• Candidates should be younger than 36. Exceptions will be made for female applicants who had to interrupt their research for pregnancy/ maternity reasons; for them the maximum age is fixed at 40.

How to apply

Candidates should submit:
• A summary (in English) of their work (max two pages).
• A copy of the abstract on the project which should have been submitted for ESTRO 35 (abstract title and submitting author to be indicated with the application)
• A curriculum vitae and a list of publications

Deadline to apply: 16 October 2015

GEC-ESTRO BEST JUNIOR PRESENTATION

Sponsored by Elekta Brachytherapy

Applications for the above listed awards are to be addressed to:
Eralda Azizaj - Programme Manager
Rue Martin V, 40
1200 Brussels, Belgium
Tel: +32 2 775 93 40
E-mail: eralda.azizaj@estro.org

JUNIOR BRACHYTHERAPY TRAVEL GRANTS

Sponsored by Elekta Brachytherapy

In training ESTRO members who need support to attend the meeting may apply for the Junior Brachytherapy Travel Grants sponsored by Elekta Brachytherapy. Five grants of 1,000 € each are available. To apply for a travel grant, please send a motivation letter indicating your interest in brachytherapy and the reasons why you should be considered for this grant to eralda.azizaj@estro.org. Please indicate your full name, age and ESTRO membership type with your letter.

Deadline to apply: 16 October 2015

ESTRO-Elekta Brachytherapy Award. Abstracts accepted for oral presentation for the brachytherapy track of ESTRO 35 will be considered for the award.

The award will be given to the most innovative paper submitted for presentation in the brachytherapy track of ESTRO 35. The winning abstract will be selected by the ESTRO 35 Scientific Advisory Group (SAG) for brachytherapy. The winner will be notified by email and announced in the ESTRO 35 programme book and exhibition guide. The award amounts to 2,000 €.

By submitting a brachytherapy abstract for ESTRO 35, you are automatically being considered for the ESTRO-Elektta Brachytherapy Award. Abstracts accepted for oral presentation for the brachytherapy track of ESTRO 35 will be considered for the award.

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Applications for the above listed awards are to be addressed to:
Eralda Azizaj - Programme Manager
Rue Martin V, 40
1200 Brussels, Belgium
Tel: +32 2 775 93 40
E-mail: eralda.azizaj@estro.org

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Deadline to apply: 16 October 2015

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ESTRO’s annual meetings are the place to be updated on the latest advances in radiation oncology. But beyond knowledge and education, developing contacts with institutes is an aspect highly sought after by many attendees.

Principle
This year visit the institutes present at the ESTRO Cancer Centres Pavilion during ESTRO 35. Bring a CV or just take a seat on their dedicated booth to discuss with their representatives science, projects, collaborations, market and, why not, job opportunities and mutual perspectives.

When
• Saturday 30 April 2016 from 13.00-18.00 hrs
• Sunday 1 May 2016 from 08.00-14.45 hrs.

Who
All ESTRO participants and institutes.

How
Entrance to the Cancer Centres Pavilion is free to all the ESTRO 35 participants. No pre-registration is needed.

Institutes interested to book a specific booth should contact Myriam Lybeer, mlybeer@estro.org. Participation is free for all institutes with an ESTRO institutional membership.

For further and updated information, please consult the ESTRO website.

The Super Run is a five-kilometres run organised by ESTRO and taking place at the occasion of its annual congress for the benefit of the ECF, the ESTRO Cancer Foundation. The Society is inviting the 5,000 participating scientists, carers, doctors, institutes and companies to join patients in the run against cancer.

The participation fee of 10€ will go directly to the ECF. The ultimate goal of the Super Run is to raise awareness on the possibility to enjoy a healthy life during and after radiotherapy treatment; staying physically active has become a reality for the majority of cancer patients undergoing radiotherapy.

So join us in Turin for the Super Run.
The annual GEC-ESTRO workshop in the autumn is now a household event of GEC-ESTRO built on the success of the earlier editions, the first having been in 2013. The event attracts both young and seasoned brachytherapists with different specialities, largely from Europe and a few worldwide. It is usually centred around smaller meetings of the various GEC-ESTRO working groups (anorectal, brachyqs, breast, gynaecology, head and neck, and urology) on a specific theme that changes from one year to another.

Young professionals with an interest in brachytherapy are encouraged to attend. It is an ideal opportunity for learning about ongoing projects with like minded brachytherapy enthusiasts. The working groups are keen to welcome new members and input.

More information on the programme and venue will be available in the spring of 2016 on www.estro.org
Information and registration

Updated Information
Please consult the ESTRO website (www.estro.org) on a regular basis for updated information. Updates are also announced on Twitter and Facebook.

Accreditation
The conference organisers will apply for CME accreditation with the European Accreditation Council for Continuing Medical Education (EACCME). Through an agreement between the European Union of Medical Specialists and the American Medical Association, physicians may convert EACCME credits to an equivalent number of AMA PRA Category 1 Credits™. Information on the process to convert EACCME credit to AMA credit can be found at www.ama-assn.org/go/internationalcme.

Live educational activities, occurring outside Canada, recognised by the UEMS-EACCME for ECMEC credits are deemed to be Accredited Group Learning Activities (Section I) as defined by the Maintenance of Certification Programme of The Royal College of Physicians and Surgeons of Canada.

Exhibition
During ESTRO events, a commercial exhibition is organised. It includes companies manufacturing radiation therapy equipment, pharmaceutical industry as well as medical publishers.

In order to increase the visibility of companies participating in the exhibition, diverse sponsoring and advertising opportunities are available.

Companies and publishers who would like to participate in the exhibition may obtain more detailed information from: Valerie Cremades Corporate Relations Manager Tel: +32 2 775 93 42 Fax: +32 2 779 54 94 E-mail: valerie.cremades@estro.org

Membership
If you become a member of ESTRO, you will be able to register to ESTRO conferences at a preferential rate. Please note that in order to benefit from the members’ rate, you must renew your membership for 2016 before registering to 2016 meetings. Membership renewal should be done at least three days before the early rate deadline. The membership internal processing and approval might take up to maximum three working days. More information about membership on our website: http://www.estro.org/members.

How to Register to an ESTRO Event?
Registration to the conference will be exclusively through our online registration form via the ESTRO website.

• You don’t have an ESTRO user name and password:
  • On the homepage of the ESTRO website (www.estro.org) go to ‘My ESTRO’ in the upper right hand corner and click on ‘Create a user account’. Follow the screens. A login and password will be sent to your e-mail address.
  • To register to an event with your details please jump to point 3.

• You have lost your password but still know your ESTRO user name:
  • On the homepage of the ESTRO website (www.estro.org) go to ‘My ESTRO’ in the upper right hand corner and click on ‘Lost password’. Fill in your user name. A new password will be sent to your e-mail address within a few minutes.
  • To register to an event with your details please jump to point 3.

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• Registration procedure with an ESTRO user name and password:
  • On the homepage of the ESTRO website (www.estro.org) go to ‘Congresses and meetings’ tab
  • Choose the event from the list of ‘Next Events’ on the left side of the page.
  • Click on the small icon ‘Registration’
  • Click on the orange ‘Register now’ button at the upper right corner of the page. You must click in the box to agree that you have read and understood the paragraph regarding renewal of membership / becoming a member.
  • Enter your user name and password again and click on ‘Login’.
  • Provide the correct invoicing address where you would like to receive your invoice and click ‘Submit invoice address’. If you need a VAT invoice, choose your professional address (VAT registered) and fill in the VAT number.
  • Check that your participant details and invoice address are correct. If they are incorrect or you wish to change them, click on the change button under the addresses. Please make sure your invoice details are correct as replacements will not be available.
  • If your addresses are correct, choose the fee you want to pay. Also check the box should you want your details to be used in promotional/commercial activity. Click on ‘Next step’ to continue.
  • For ESTRO conferences there are some additional options that you can choose in the following pages before the payment page.
  • On the payment page please select payment by credit card.
  • On the overview page check you details and the products that you have chosen to register to. If they are incorrect, use the ‘Previous step’ button to go backwards.
  • Tick the box accepting the ESTRO terms and conditions and click on the Submit button.
  • If you had selected to pay with a credit card, you will be directed to a secure credit card payment site where you have fill in your credit card details. (www.ogone.be)
  • The last page should be the registration acknowledgement page. Additionally you will receive an email confirming that ESTRO has received your registration.
  • A confirmation letter for ESTRO conferences will be sent to you about 2 weeks prior to the event.

How to Register Somebody Else to an ESTRO Event?
Follow the steps in ‘How to register to an ESTRO event’ and on point 3.5 change the participant details to the person who is actually attending the event.

If you have more than one person to register, contact the ESTRO office.

For any assistance, please contact the ESTRO office. To register for conferences, please send an email to Lilian Niwerungero, events@estro.org.
4.2

SCIENTIFIC COLLABORATION

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBCC 10 - EUROPEAN BREAST CANCER CONFERENCE</td>
<td>9 - 11 March 2016</td>
<td>Amsterdam, The Netherlands</td>
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<tr>
<td>ESTRO Workshop on Accelerated Partial Breast Irradiation: Current Status and Perspectives</td>
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<tr>
<td>ELCC</td>
<td>13 - 16 April 2016</td>
<td>Geneva, Switzerland</td>
</tr>
<tr>
<td>2016 WORLD CONGRESS OF BRACHYTHERAPY</td>
<td>27 - 29 June 2016</td>
<td>San Francisco USA</td>
</tr>
</tbody>
</table>
Chair: B. Offersen (Denmark)
Chair: D. Gabrys (Poland)

WORKSHOP PROGRAMME

SESSION I
Are we treating the disease we think we are?
Speaker: D. Gabrys (PL)
GEC-ESTRO consensus guideline for target delineation in partial breast irradiation
Speaker: V. Strnad (DE)
TARGET-A Trial
Speaker: F. Wenz (DE)
Results from the ELIOT Trial
Speaker: R. Orecchia (IT)
Panel discussion: What are the optimal patient selection criteria for APBI? Can RT be safely withheld in selected patients?

COFFEE BREAK

SESSION II
Long term results of the phase III GEC-ESTRO APBI trial
Speaker: C. Polgár (HU)
Results from the phase III randomised trial IMPORT-LOW
Speaker: C. E. Coles (UK)
Results from the randomised DBCG PBI Trial
Speaker: B. Offersen (DK)
Panel discussion: Is APBI ready for prime time? What is the optimal strategy? What can we learn about volume effects and fractionation?

ESMO and IASLC are pleased to announce that the 6th edition of the European Lung Cancer Conference (ELCC) will take place 13-16 April 2016, in Geneva, Switzerland.

The European Lung Cancer Conference is a collaborative effort of the most important multidisciplinary societies representing thoracic oncology specialists, all working towards a shared goal: to advance science, disseminate education and improve the practice of lung cancer specialists worldwide. We invite you to save the date.

MAIN THEMES FOR ELCC 2016:
- The IASLC new staging system
- The new WHO classification
- Immunotherapy
- New steps in the treatment of molecularly-defined NSCLC
- Screening (and reimbursement issues)
- Stereotactic RT and minimally invasive local treatments.

The conference is relevant for radiotherapists, interventional radiologists, medical oncologists, thoracic surgeons, respiratory physicians, and other medical professionals involved in the diagnosis, treatment and follow-up of patients with lung cancer.

WWW.ELCC2016.ORG
Total patient QA

Delta⁴ Discover

AT-TREATMENT VERIFICATION
- Delivered dose
- MLC position
- Gantry angle
- Collimator angle
- Patient in position

PRE-TREATMENT VERIFICATION
- Composite dose
- 3D dose in phantom and patient
- Clinical significance of deviation
- Beam and control point doses
- Machine QA

The Wireless Phantom

Delta⁴ Phantom

Delta⁴ – Confidence based on real measurements

2016 World Congress of Brachytherapy
27 - 29 June 2016
San Francisco, USA

Every four years, brachytherapy professionals worldwide come together for the World Brachytherapy Meeting. The fifth edition, held in 2012, was hosted by ESTRO. GEC-ESTRO is pleased to announce the next World Congress of Brachytherapy, from 27-29 June 2016, in San Francisco USA. It will be hosted by the American Brachytherapy Society (ABS) while the scientific programme will be a collaborative effort with GEC-ESTRO, ALATRO, and the Indian and Australasian brachytherapy groups.

For more information on the meeting please visit: WWW.AMERICANBRACHYTHERAPY.ORG/MEETINGS
Introducing VitalBeam™, the advanced radiotherapy system that’s as vital to advancing your clinic as you are.

Quality cancer care demands advanced technology. Meet these demands with the Varian VitalBeam radiotherapy system. This innovative technology puts sophisticated treatments within reach while allowing you to grow at your own pace.

With the ability to build upon its advanced architecture, you can customize your technology as you move your clinic forward.

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Learn more about VitalBeam at www.varian.com  info.europe@varian.com
Introducing the system that knows no boundaries.

Meet Leksell Gamma Knife® Icon™, the most advanced solution for cranial radiosurgery. Icon enables you to treat any cranial target with confidence — with significantly lower dose to normal tissue than other systems.

Frame-based or frameless immobilization, single session or hypofractionation, radiosurgery or ultra-precise microradiosurgery — the choice is yours. The introduction of Icon brings a number of new innovations. The unique High-Definition Motion Management system enables frameless treatments with industry-leading accuracy. With true stereotactic Cone Beam CT, Online Adaptive DoseControl™ technology and virtual 6D couch, the dose is always delivered exactly where planned.

Born of a profound care for patients with cranial disorders, every detail of Icon has been designed with the patient in mind, and those who treat them.

Leksell Gamma Knife Icon Care for the brain.

Leksell Gamma Knife® Icon™ is not for sale in all markets
FDA approved, CE-marked

Visit www.careforthebrain.com