

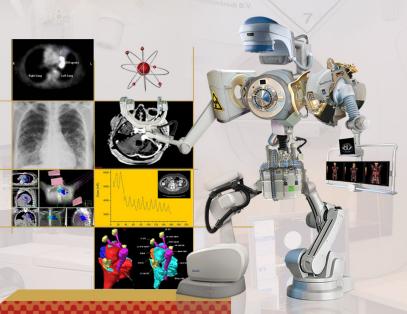




RADIOTHERAPY TECHNIQUES WITH EMPHASIS ON IMAGING & TREATMENT PLANNING

Program Schedule

09 - 13 October 2011 / 11 - 15 Dhu Al- Qada 1432 VENUE: King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia



SPEAKERS

Jake van Dyk, Ph.D., FCCPM
Adnan Al Hebshi, M.D., FRCPC
Wassim Jalbout, Ph.D., DABMP
Paul Keall, Ph.D., FAAPM
Belal Moftah, Ph.D., FCCPM
Jatinder Palta, Ph.D., FAAPM
M. Gary Sayed, Ph.D., FACNM
Mohammad Al-Shabanah, M.D., FRCPC
Paula Yates, RT(T), CMD

COURSE DIRECTORS

Belal Moftah, Ph.D., FCCPM Jake van Dyk, Ph.D., FCCPM

HOSTED BY:

Biomedical Physics Department King Faisal Specialist Hospital & Research Centre

SPONSORED BY:

International Atomic Energy Agency
King Abdulaziz City for Science and Technology

For more information, please visit our website: www.radmed.org or contact

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Welcome Address

It is a great pleasure to host the International Atomic Energy Agency (IAEA) "Regional Training Course on Radiotherapy Techniques with Emphasis on Imaging and Treatment Planning, RAS6054", at King Faisal Specialist Hospital and Research Centre (KFSH&RC), Riyadh, Saudi Arabia, from 09 to 13 October 2011. I am delighted to welcome each participant from the different Arab-Asia (ARASIA) countries and our distinguished experts and guests to this event. The KFSH&RC is honored to have been selected as the hosting institution for this training course and to be part of the cause and effort to improve the understanding and implementation of imaging and treatment planning techniques for effective radiotherapy treatment of cancer patients in the ARASIA member states.

The program activities will be led by select faculty members including IAEA experts and other experienced speakers in the fields of Radiotherapy Physics and Medical Dosimetry, and we are fortunate to have their respective professional contributions for our didactic lectures and hands-on sessions. I believe that our joint presence at this gathering, clearly demonstrates an exclusive unity to contribute for the improvement of healthcare methods within the framework of the IAEA technical cooperation training program.

I would like to extend special thanks to the organizers of this training course: the IAEA, KACST, and KFSH&RC. They have all been of invaluable help to us in the preparations for this event. I am personally glad to have been designated by IAEA as Course Director and grateful for the continued IAEA's recognition of and trust in our expertise and the services that we provide here at KFSH&RC.

While the planned program activities for this 5-day event certainly will take us considerably further in our understanding of state-of-the-art approaches in clinical radiation therapy physics, I am certain that this training course will mark the beginning rather than the end of our work of contributing to the increasingly important field of Imaging and Treatment Planning in Radiotherapy.

Thank you and welcome to all of you!

Sincerely,

Belal Moftah, PhD, FCCPM

Course Director, IAEA Course

Chairman, Biomedical Physics Department

Head, Radiation Physics

King Faisal Specialist Hospital & Research Centre

Riyadh, Saudi Arabia



Course Description

The significant advances in radiotherapy techniques are rapidly modernizing the planning and delivery of radiation therapy in the treatment of cancer. This IAEA continuing education program offers the opportunity to acquire the skills, knowledge and strategies that will help successfully apply and implement the principles of image guidance and modern treatment planning into radiotherapy practice. This training course focuses on topics that will help improve the understanding and implementation of imaging and treatment planning for the effective treatment of cancer patients and will cover didactic lectures and practical exercises on the following subjects:

Lectures:

Imaging for Radiation Treatment Planning

General Overview with Emphasis on ICRU Concepts

CT: Principles & Applications MRI: Principles and Applications

Setup & Simulation

Patient Immobilization, for Precision RT, Body Frames, Visual Patient

Tracking, Respiratory Management

Treatment Delivery

IMRT Systems and QA

IMRT, MLC, Record and Verify, System Design and QA

Patient Specific QA for IMRT: Dosimetry, EPID and Cone Beam CT, MVCT, KV-CBCT

IGRT, Inter and Intra Fractional Motion Management

Treatment Planning

TPS Acquisition, Acceptance, Commissioning & QA

Treatment Plan Optimization, Evaluation Metrics, Radiobiological

Modeling, Dose Volume Constraints

Patient Specific QA. Assessment of Plan Acceptability, Transfer of Plan to Linac, R&V System

Monte Carlo Calculations and Advanced Planning: Monte Carlo, Current Status, Speed and Accuracy

TomoTherapy

What we have Learned? Local Experience

Practical Sessions:

TPS: 3D Pelvis

TPS: 3D Field in Field Breast

TPS & IGRT: IMRT/RA

TPS &IGRT: Tomo TPS & IGRT: Cyberknife

Case Studies:

Breast; Lung; Brain

Course Objectives

This training course is aimed at helping professionals in the different ARASIA communities who are involved in the implementation and management of radiation therapy programs to transform old radiation treatment approaches to advanced radiotherapy. The primary objectives of this course are summarized as follows:

- 1. To obtain from experts information on latest radiotherapy techniques.
- 2. To experience hands-on exercises on state-of-the-art radiotherapy equipment.
- 3. To adopt innovative radiotherapy approaches in imaging and treatment planning in clinical practice.
- 4. To apply and implement the principles of image guidance into radiotherapy practice.
- 5. To integrate imaging technologies with the process of radiation therapy treatment.
- 6. To explore strategies in treatment planning for implementation of advanced radiotherapy practice.

Course Management

Course Directors:

Dr. Belal Moftah

Chairman, Biomedical Physics Department KFSH&RC - Riyadh, Saudi Arabia

Dr. Jake van Dyk

Professor Emeritus University of Western Ontario Canada

IAEA Course Management Appointees:

Dr. Ian Donald Mclean

Technical Officer IAEA, Vienna, Austria

Dr. Mahfoudh Abdullah

Program Management Project Officer Division for Asia and the Pacific IAEA, Vienna, Austria

Ms. Gladis Steephen-Madhavappallil

Program Management Project Officer Division for Asia and the Pacific IAEA, Vienna, Austria

Speakers



Jake van Dyk, Ph.D., FCCPM

Dr. Jake van Dyk is Professor of Oncology, Medical Biophysics, Medical Imaging, and Adjunct Professor of Physics at the University of Western Ontario, London, Ontario, Canada, and Manager (Head) of Physics and Engineering at the London Regional Cancer Program of the London Health Sciences Centre. He has about 38 years of experience in the practical facets of radiation oncology physics with 24 years at the Princess Margaret Hospital (PMH) in Toronto, Canada and 14 years at the London Regional Cancer Program. His research includes multiple aspects of the implementation

of modern technology into clinical practice. His recent research addresses outcome optimization and uncertainty propagation in conformal and intensity modulated radiation therapy as well as the assessment of normal tissue response to radiation treatment. He has won various teaching awards. He was elected Fellow of the American Association of Physicists in Medicine in July 1997 for his "contributions to the field of medical physics". He has served as the President of the Canadian College of Physicists in Medicine for four years and participates on the boards and task groups of various professional, national and international organizations. He also participates as a consultant and lecturer for the International Atomic Energy Agency and the World Health Organization.



Adnan Al Hebshi, M.D., FRCPC

Dr. Adnan Al Hebshi is a Consultant Radiation Oncologist in the Section of Radiation Oncology, Oncology Centre at King Faisal Specialist Hospital and Research Centre (KFSH&RC), Riyadh, Saudi Arabia. Dr. Al Hebshi is an assistant professor at Al Faisal University since 2009. His interest is in treatment of CNS tumors and lung cancer. He is responsible for the Stereotactic Radiosurgery program and Cyberknite treatment unit. He received his MBBS degree from King Abdulaziz University Medical College and Allied Science in Jeddah, KSA in 1990. He is board certified by The Royal College of Radiologists –FRCR (UK), by The American Board of Radiology

(ABR), and by The Fellowship of Royal College of Physician and Surgeon of Canada – FRCPC. Dr. Al Hebshi served as a resident at Princess Margaret Hospital University of Toronto from 2001 to 2005 and took on a consultant position at KFSH&RC in August 2005. He is an active member of hospital committees such as Performance Improvement (PI) Committee, and Pharmacy and Therapeutic (PT) Committee. Dr. Al Hebshi is also a member of Saudi Oncology Society (SOS), Cyberknife Society, and The American Society of Radiation Oncology (ASTRO).



Wassim Jalbout, Ph.D., DABMP

Dr. Wassim Jalbout is currently a Clinical Medical Physicist at the American University of Beirut Medical Center of the Radiation Oncology Department in Beirut, Lebanon. He earned his M.S. degree in Medical Physics at Wayne State University, Detroit Michigan in 1995 and his Ph.D. Degree in Medical Physics at the University of Surrey, UK in 2005. He was certified by the American Board of Medical Physics, in 1999. He is presently a Medical Physics teaching program director, Regional Consultant for starting new Radiotherapy Centers and IAEA Consultant for Medical Physics improvement

project in the Middle East. Dr. Jalbout's main research interests, publications, and presentations involved Linac

Speakers



Paul Keall, Ph.D., FAAPM

Dr. Paul Keall is currently a Professor at the University of Sydney and Director of the Radiation Physics Laboratory. His work is broadly supported by the NHMRC Australia Fellowship Innovations in Medical Physics to Improve Human Health with additional funding supporting individual projects. Previously Dr. Keall was an Associate Professor and Director of the Radiation Physics Division of the Radiation Oncology Department at Stanford University. Dr. Keall earned his M.S. and Ph.D. degrees at the University of Adelaide in Australia and his B.S. degree at the University of Waikato in New Zealand. Dr. Keall's main scientific interests involve image guided radiation therapy and accounting for anatomic and physiologic changes in healthy and pathologic tissue throughout a radiation treatment course. Additional areas of investigation include ventilation imaging, audiovisual biofeedback, compact

plasma proton accelerators and MRI and PET-guided linear accelerators. These research activities have resulted in over 130 scientific articles and several awards and honors. He has developed new methods for medical imaging and image guided radiation therapy. He is an editorial board member for several journals in the radiation oncology field and participates in professional activities and committees of the American Association of Physicists in Medicine and the American Society for Radiation Oncology.



Belal Moftah, Ph.D., FCCPM

Dr. Belal Moftah is the Chairman of the Biomedical Physics Department, King Faisal Specialist Hospital and Research Centre (KFSH&RC), Riyadh, Saudi Arabia. He received his Ph.D. degree from the University of British Columbia, in 1996 and completed his residency training program at McGill University, in 1999. He is board certified in Radiotherapy Physics by the Canadian College of Physicists in Medicine and is a fellow of the same College. Dr Moftah served as Clinical Physicist at the Department of Medical Physics, McGill University Health Centre from 1998 to 2001. In July 2001, Dr. Moftah took on a senior medical physicist position at KFSH&RC in Jeddah where he established

the Medical Physics Department and became its first Chairman in February 2004. Dr. Moftah moved to the main KFSH&RC campus in Riyadh and became the Chairman of the Department of Biomedical Physics in September 2005. Dr. Moftah focus has been on setting up medical physics and radiotherapy services as well as the development of state-of-the-art radiotherapy techniques. Dr. Moftah was selected as one of five eminent experts to serve on the IAEA Independent Panel of Experts on Human Health for the Comparative Assessment of Nuclear Technology. He is Counterpart for several IAEA Technical Cooperation projects as well as the Chairman of the IAEA ARASIA Clinical Residency Training Working Group. Dr. Mortal served as Chairman of major international conferences and workshops, the last of which was the International Conference on Radiation Medicine, www.radmed.org.



Jatinder Palta, Ph.D., FAAPM

Dr. latinder Palta was the Chief of the Division of Physics from 1993 until 2009. His research interests are in the development and implementation of new methods of radiation delivery and analyses of treatment planning and delivery uncertainties. He is the author or co-author of more than 100 peer-reviewed scientific papers, three books, as well as multiple contributions to proceedings and chapters in technical books. He served as the Co-Director of the ASTRO IMRT Practicum from 2003-2006 and IGRT Symposium from 2006-2008. He has been active in the establishment of clinical and QA guidelines for the implementation of IMRT and IGRT through ASTRO, AAPM, and IAEA. In addition, he

initiated a federally funded research program that has distinguished the University of Florida as the leading group in Radiation Oncology medical informatics and advanced electronic archive and retrieval of radiotherapy data. He established the Resource Center for Emerging Technologies (RCET) in 1998 as a center to support clinical trial group web-based electronic data collection and quality assurance. Professor Palta has garnered over US\$7 million in federal and state research funding as a Principal Investigator (PI) in the last 10 years. Dr. Palta has served both the AAPM and ASTRO in various leadership roles. He is presently the Chair of Research Council and Member of the ASTRO Board of Directors. He also serves as a permanent member of the National Institutes of Health (NIH) Radiation Therapeutics and Biology Study Section.

Speakers



M. Gary Sayed Ph.D., FACNM

Dr. Gary Sayed is the director of Molecular and Functional Imaging Group at the King Faisal Specialist Hospital & Research Centre and Professor of Radiology at Alfaisal University College of Medicine. He is also a clinical professor of diagnostic imaging at Thomas Jefferson University in Philadelphia, Pennsylvania. Dr Sayed earned his first doctoral degree in radiological sciences at the Medical College of Ohio at Toledo. He earned his second doctoral degree in higher education management at the University of Pennsylvania Graduate School of Education. Dr Sayed is certified by the American Board of Science in Nuclear Medicine. In 1996, he was the recipient of the senior Fulbright Scholar award in radiology and in 2001 he

was honored as a Distinguished Fellow of the American College of Nuclear Medicine. Dr. Sayed is a current director and past-president of the American Board of Science in Nuclear Medicine. He also served as president of the nuclear medicine instrumentation council. His 22 years of academic career includes service as program director, chairman, dean and provost all at major academic medical and health sciences universities in the United States.



Mohammad Al-Shabanah, M.D., FRCPC

Dr. Mohammad Al-Shabanah is presently a Consultant of Radiation Oncology at King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia. He obtained Specialist Certificate in Radiation Oncology from the Royal College of Physicians and Surgeons of Canada, in 1997. He was appointed as Head of Radiation Oncology at KFSH&RC in 2002. Under his leadership KFSH&RC radiotherapy services have witnessed remarkable progress in introducing and implementing new technologies such as IMRT, Cyberknife, RapidArc, and Tomotherapy all utilizing IGRT. He has contributed to 19 publications and over 20 presentations and abstracts. Dr. Al-Shabanah is a member of the Canadian Association of Radiation Oncology, and the

American Society for Therapeutic Radiology and Oncology (ASTRO).



Paula Yates, RT(T), CMD

Paula Yates is a Senior Medical Dosimetrist in the Biomedical Physics Department at King Faisal Specialist Hospital and Research Centre (KFSH&RC), Riyadh, Saudi Arabia. She graduated as a Radiation Therapist in 1997 and worked as such in Wellington and Dunedin, New Zealand and in Fraser Valley Cancer Center in British Columbia, Canada. Her experience as a radiation therapist included specific interest in medical dosimetry which culminated in her becoming the Lead Dosimetrist while helping in the set up of Al Amal Hospital in Doha, Qatar in 2003. This was the first Radiation Therapy Clinic in Qatar. Paula attained her Certified Medical Dosimetrist (CMD) qualification from the

American Medical Dosimetry Certification Board (MDCB) in 2006. She is a member of the KFSH&RC Radiation Physics team involved in implementing the forward-planned 3-D breast treatment technique as well as taking leading roles in IMRT, RapidArc and Tomotherapy planning. Paula supervises, along with other senior dosimetrists, the training of medical physics colleagues and visiting physicists/dosimetrists in clinical dosimetry.

Practical Sessions Instructors

Manal Awidah, B.Sc., Biomedical Physics Department, KFSH&RC, Riyadh

Omar Chibani, Ph.D., Biomedical Physics Department, KFSH&RC, Riyadh

Osama Hassad, B.Sc., Biomedical Physics Department, KFSH&RC, Riyadh

Zeinab Hassan, Ph.D., Biomedical Physics Department, KFSH&RC, Riyadh

Mohammed Abrar Hussain, Ph.D., DABR, Biomedical Physics Department, KFSH&RC, Riyadh

Abdullah Al-Kafi, M.Sc., Biomedical Physics Department, KFSH&RC, Riyadh

Ghadeer Nazer, B.Sc., Biomedical Physics Department, KFSH&RC, Riyadh

Ahmed Nobah, M.Sc., Biomedical Physics Department, KFSH&RC, Riyadh

Sameha Julie Pickford, RT(T), Radiation Therapy, Oncology Centre, KFSH&RC, Riyadh

Lorcel Ericka Venturina, B.Sc., Biomedical Physics Department, KFSH&RC, Riyadh

Jason Yan, M.Sc., Biomedical Physics Department, KFSH&RC, Riyadh

Opening Ceremony

Sunday, 09 October 2011

Venue: Research Centre Room #304

1000—1030

Recitation of the Holy Quran

Dr. Adnan Al Hebshi Consultant, Radiation Oncology, Oncology Centre King Faisal Specialist Hospital & Research Centre Riyadh, Saudi Arabia

Opening Remarks

Dr. Belal Moftah Director, IAEA Course 2011 Chairman, Biomedical Physics Department King Faisal Specialist Hospital & Research Centre Riyadh , Saudi Arabia

IAEA Course Coordinator Address

Dr. Jake van Dyk Professor Emeritus University of Western Ontario Canada

Executive Director Address

Dr. Sultan T. Al-Sedairy
Executive Director
King Faisal Specialist Hospital & Research Centre
Riyadh , Saudi Arabia



Day 1 Sunday, 09 October 2011

0730 — 0830	Registration and Breakfast (Venue: Research Centre Room #304)
	Lecture Sessions (Venue: Research Centre Room #304)
0830 — 0900	Course Overview and Self-Introductions of Participants
0900 — 1000	Imaging for Radiation Treatment Planning I: General Overview with Emphasis on ICRU Concepts Lecturer: Jake Van Dyk, Ph.D., FCCPM
1000 — 1030	Opening Ceremony & Coffee Break
1030 — 1110	Imaging for Radiation Treatment Planning II: CT: Principles & Applications Lecturer: Jatinder Palta, Ph.D., FAAPM
1110 — 1150	Imaging for Radiation Treatment Planning II: MRI: Principles & Applications Lecturer: Paul Keall, Ph.D., FAAPM
1150 — 1230	Imaging for Radiation Treatment Planning II: Nuclear Medicine, PET, SPECT Lecturer: M. Gary Sayed, Ph.D., FACNM
1230 — 1400	Lunch Break
1400 — 1530	Setup and Simulation: Patient Immobilization for Precision RT, Body Frames, Visual Patient Tracking, Respiratory Management <i>Lecturer:</i> Wassim Jalbout, Ph.D., DABMP
1530 — 1600	Coffee Break
1600 — 1800	Treatment Delivery I: IMRT Systems and QA. IMRT, MLC, Record and Verify, System Design & QA <i>Lecturer:</i> Jatinder Palta, Ph.D., FAAPM

-- End of Session - --

Day 2 Monday, 10 October 2011

LEE CONTRACTOR LE CON
Lecture Sessions (Venue: Research Centre Room #304)
Treatment Planning I: TPS Acquisition, Acceptance, Commissioning & QA Lecturer: Jake Van Dyk, Ph.D., FCCPM
Coffee Break
Treatment Planning II: Treatment Plan Optimization, Evaluation Metrics, Radiobiological Modeling, Dose-Volume Constraints <i>Lecturer:</i> Wassim Jalbout, Ph.D., DABMP
Treatment Planning II: Treatment Plan Optimization, Evaluation Metrics, Radiobiological Modeling, Dose-Volume Constraints <i>Lecturer:</i> Paul Keall, Ph.D., FAAPM
Lunch Break
Treament Planning III: Patient Specific QA. Assessment of Plan Acceptability, Transfer of Plan to Linac, R&V System <i>Lecturer:</i> Belal Moftah, Ph.D., FCCPM
Coffee Break
Practical Sessions (Venue: Radiation Physics Area, Oncology Bldg.)
Practical Session I

--- End of Session --

Day 3

Tuesday, 11 October 2011

	Lecture Sessions (Venue: Oncology Conference Hall)
0830 — 0915	Treatment Delivery II: Patient Specific QA for IMRT: Dosimetry, EPID, and Cone Beam CT, MVCT Lecturer: Wassim Jalbout, Ph.D., DABMP
0915 — 1000	Dosimetry, EPID, MV Imaging Lecturer: Jatinder Palta, Ph.D., FAAPM
	Lecture Sessions (Venue: Research Centre Room #304)
1000 — 1030	Coffee Break
10:30 — 12:30	Treatment Planning IV: Monte Carlo Calculations and Advanced Planning: Monte Carlo, Current Status, Speed and Accuracy <i>Lecturer:</i> Paul Keall, Ph.D., FAAPM
1230 — 1400	Lunch Break
1400 — 1530	Treatment Delivery III: IGRT, Inter and Intra Fractional Motion Management Lecturer: Jatinder Palta, Ph.D., FAAPM Lecturer: Paul Keall, Ph.D., FAAPM
1530 — 1600	Coffee Break
	Practical Sessions (Venue: Radiation Physics Area, Oncology Bldg.)
1600 — 1800	Practical Session II TPS: 3D, FinF, Breast Group I: Ghadeer Nazer, B.Sc. Group II: Paula Yates, RT(T), CMD

--- End of Session ---

Day 4 Wednesday, 12 October 2011

	The state of the s
	Lecture Sessions
	(Venue: Research Centre Room #304
0830 — 0915	IGRT TomoTherapy: What have we learned? Lecturer: Jake Van Dyk, Ph.D. FCCPM
0915 — 1000	Tomotherapy: Local Experience Lecturer: Paula Yates, RT(T), CMD; Sameha Julie Pickford, RT(T)
1000 — 1030	Coffee Break
1030 — 1130	Case Studies: Breast Instructor: Mohammad Al-Shabanah, M.D., FRCPC
1130 — 1230	Lung; Brain Instructor: Adnan Al Hebshi, M.D., FRCPC
1230 — 1400	Lunch Break
	Practical Sessions (Venue: Radiation Physics Area, Oncology Bldg.)
1400 — 1530	Practical Sessions III TPS & IGRT: IMRT/RA Instructors: Belal Moftah, Ph.D., FCCPM; Ahmed Nobah, M.Sc.
1530 — 1600	Coffee Break
1600 — 1800	Practical Sessions IV PSQA Group I: Abdullah Al-Kafi, M.Sc. Group II: Ahmed Nobah, M.Sc.

Day 5

Thursday, 13 October 2011

	Practical Sessions (Venue: Radiation Physics Area, Oncology Bldg.)
0830 — 0930	Practical Sessions V TPS & IGRT: Tomo Instructors: Omar Chibani, Ph.D.; Zeinab Hassan, Ph.D.; Osama Hassad, B.Sc.
0930 — 1030	Practical Sessions VI TPS & IGRT: Cyberknife Instructors: Jason Yan, M.Sc.; Abrar Hussain, Ph.D., DABR
1030 — 1100	Coffee Break
1100 — 1130	Review of the week: Participants feedback All speakers and course directors
1130 — 1230	Examination
1230 — 1330	Lunch Break
1330 — 1500	Final questions/ discussion All speakers and course directors Closing Ceremony

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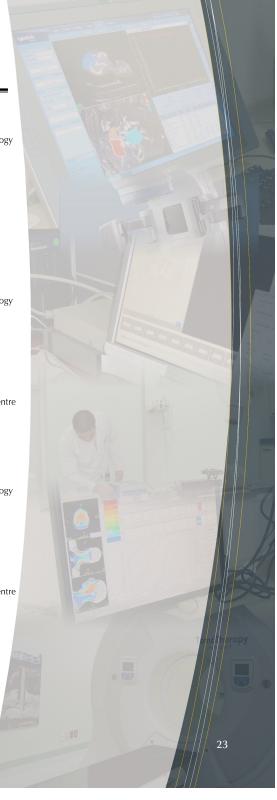
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On-site Registration

All participants are requested to sign in and pick up training course material at the Registration/Information Desk in RC room #304, Research Centre Building, KFSH&RC, Riyadh.

Certificate of Attendance

Certificates of Attendance will be provided by IAEA. These will be awarded to participants during the training course closing ceremony.

Accommodation and Transportation

Hotel reservations will be arranged by the Biomedical Physics Department of the King Faisal Specialist Hospital & Research Centre for non-local speakers and participants. The Department will advise of hotel and local transportation details.

Visa Processing

Non-local lecturers and participants will require a visa to visit the Kingdom of Saudi Arabia. The King Faisal Specialist Hospital and Research Centre will assist IAEA approved lecturers and participants in the visa issuance process.

Course Organizers

King Faisal Specialist Hospital & Research Centre (KFSH&RC) Riyadh, Saudi Arabia



مستشفى الملك فيصل التخصصي ومركز الأبحاث King Faisal Specialist Hospital & Research Centre مؤسسة عامة . Gen. Org

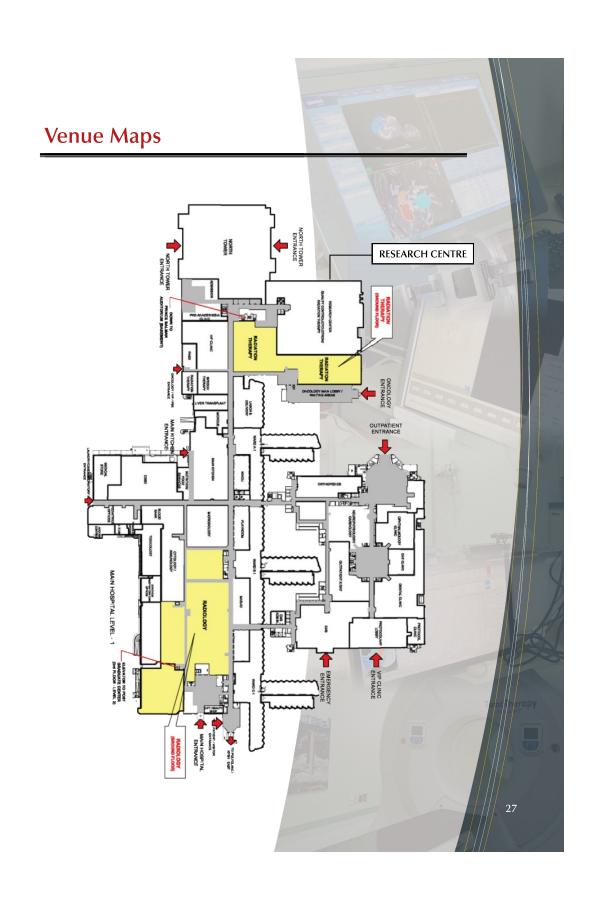
International Atomic Energy Agency (IAEA) Vienna, Austria



IAEA

King Abdulaziz City for Science and Technology (KACST) Riyadh, Saudi Arabia





Venue Maps

