



Program Schedule

INTENSIVE COURSE & WORKSHOP
THE WORLD OF
MEDICAL PHYSICS

07-09 DECEMBER 2010

VENUE:
KING FAISAL SPECIALIST HOSPITAL
& RESEARCH CENTRE
RIYADH, SAUDI ARABIA

SPEAKERS / LECTURERS



**ERVIN B. PODGORSAK, PhD,
FCCPM, DABMP, FAAPM, FACMP**

Professor of Medical Physics
Senior Medical Physicist
Department of Medical Physics
McGill University Health Centre, Montreal, Canada



BELAL MOFTEH PhD, FCCPM

Chairman, Biomedical Physics Department
Head, Radiation Physics
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MOHAMMAD AL-SHABANAH, MD

Head, Radiation Oncology
Oncology Centre
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WALEED AL-NAJJAR, PhD, DABR, DABMP

Adjunct Senior Medical Physicist
Biomedical Physics Department
King Faisal Specialist Hospital & Research Centre
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WORKSHOP INSTRUCTORS

- Omar Chibani, PhD
- Zeinab Hassan, PhD
- Abdullah Al-Kafi, MSc
- Tarek El-Kaissi, PhD, DABR
- Fareed Mayhoub, MSc, MIPEM
- Belal Mofteh, PhD, FCCPM
- Huda Al-Mohammed, PhD, RT(T), CMD
- Waleed Al-Najjar, PhD, DABR, DABMP
- Ghadeer Nazer, BSc
- Ahmad Nobah, MSc
- Wedyan Safar, BSc, CMD
- Marmoun Shehadeh, MSc
- Lorcel Ericka Venturina, BSc
- Xiangsheng Yan, MSc
- Paula Yates, RT(T), CMD

Send registration form and payment to:

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INTENSIVE COURSE & WORKSHOP: THE WORLD OF MEDICAL PHYSICS

Course & Workshop Description

This intensive course will present comprehensive lectures to offer a broad understanding of the fundamentals of Medical Physics and help participants to prepare for board certification. In addition, workshops will cover topics ranging from basic radiation therapy planning procedures through to advanced radiation therapy techniques.

An anonymous practice board exam will be given during the first and last day of the course to provide participants with medical physics certification exam practice.

The practice exam will consist of typical board exam questions on basic radiation physics. Students will complete the exam and hand it in under their chosen code name and the exam results will be posted under the code names. Handouts related to specific lectures will be distributed before lectures.

DAY 1

Tuesday, 07 December 2010

0730 – 0800 Registration (Venue: Research Centre Room #304)

0800 – 0900 Breakfast

0900 – 1030 **Lecture #1: KEYNOTE PRESENTATION**
Medical Physics: A Profession and Science
Presenter: Prof. Ervin Podgorsak
Professional and scientific issues in medical physics will be discussed, such as: Concentration of medical physicists around the world • Recognition of medical physics as a profession • Medical Physics organizations • Accreditation of medical physics academic and clinical education programs • Certification and licensure of medical physicists • Best route to medical physics profession • Teaching of medical physics • Importance of medical physics research • Burning issues in contemporary medical physics • Current trends in medical physics

1030 – 1100 **Lecture #2:**
Medical Physics in Saudi Arabia: Current & Future Trends
Presenter: Dr. Belal Mofitah
Introduction and discussion of national medical physics issues and concerns. Topics covered will include: Education • Clinical training • Employment

1100 – 1200 Preliminary Practice Board Exam (Anonymous)
Chair: Prof. Ervin Podgorsak

1200 – 1315 Prayer Time and Lunch

VENUE:

Research Centre Room #304 (Registration and Lecture Sessions)
Radiation Physics/Therapy Area, Radiation Oncology Building (Workshop Sessions)

1315 – 1415 **Lecture #3:**
Radiation Physics I
Presenter: Prof. Ervin Podgorsak
Introduction to modern physics • Rules governing physical quantities and units • Classification of fundamental particles • Classification of radiation • Radiation quantities and units • Introduction to nuclear physics • Important relativistic relations

1415 – 1500 **Lecture #4:**
Radiation Therapy Process
Presenter: Dr. Mohammad Al-Shabanah
Introduction to the radiation therapy process from initial diagnosis through to CT-Simulation, treatment planning, treatment procedure and follow-up.

1500 – 1530 Prayer Time and Coffee Break

1530 – 1800 **Workshop #1: Radiation Therapy Process**
Instructors: Mr. Abdullah Al-Kafi, Mr. Fareed Mayhoub, Dr. Huda Al-Mohammed, Mrs. Ghadeer Nazer, Ms. Lorcel Ericka Venturina and Ms. Paula Yates
Show-and-tell workshop where participants will be given a step-by-step demonstration of various aspects of the radiation therapy process. This will include: Contouring, planning, QA and plan evaluation for different cases • A variety of different techniques (2-D, 3-D, FinF, IMRT) will be demonstrated to facilitate discussion • Active interaction between faculty and audience will be encouraged.

*** End of Session ***

DAY 2

Wednesday, 08 December 2010

0800 – 0930 **Lecture #5:**
Radiation Physics II
Presenter: Prof. Ervin Podgorsak
Coulomb scattering • Geiger-Marsden experiment and Rutherford scattering • Bohr model of hydrogen atom • Hartree theory • Ionization potential of atoms • Experimental confirmation of Rutherford-Bohr atomic model • Bremsstrahlung radiation • Characteristic radiation

0930 – 1000 Coffee Break

1000 – 1200 **Lecture #6:**
Advanced Radiotherapy Techniques
Presenter: Dr. Belal Mofitah
Intensity Modulated Radiation Therapy (IMRT) • Stereotactic Radiosurgery • Helical Tomotherapy • Volumetric Arc Therapy • Proton Carbon Ion Therapy (PCIT)

1200 – 1315 Prayer Time and Lunch

1315 – 1415 **Lecture #7:**
Radiation Physics III
Presenter: Prof. Ervin Podgorsak
Interaction of photons with matter • Photoelectric effect • Compton effect • Pair production • Photonuclear reactions • Attenuation coefficients • Energy transfer in absorber • Energy absorption in absorber • Energy transfer coefficient • Energy absorption coefficient

1415 – 1515 **Lecture #8:**
Radiation Gone Wrong
Presenter: Dr. Waleed Al-Najjar
Discussion of incidents in radiation medicine including: Accidents in Teletherapy • Accidents in Brachytherapy • Prevention of Accidents in Radiation Therapy

1515 – 1545 Prayer Time and Coffee Break

1545 – 1800 **Workshop #2: Introduction to Advanced Radiation Therapy Techniques**
Instructors: Dr. Omar Chibani, Dr. Zeinab Hassan, Dr. Tarek El-Kaissi, Mrs. Ghadeer Nazer, Mr. Ahmad Nobah, Mrs. Wedyan Safar, Mr. Mamoun Shehadeh and Mr. Xiangsheng Yan
Show-and-tell workshop where participants will be given a step-by-step demonstration of various advanced radiation therapy techniques using the latest treatment modalities, such as Tomotherapy, RapidArc and CyberKnife.

*** End of Session ***

DAY 3

Thursday, 09 December 2010

0900 – 1000 **Lecture #9:**
The Effect of Target and Flattening Filter on Quality of Clinical Linac X-ray Beam
Presenter: Prof. Ervin Podgorsak
Basic physics of clinical linac beam formation will be discussed.

1000 – 1100 Final Practice Board Exam (Anonymous)

1100 – 1130 Coffee Break

1130 – 1215 Anonymous Practice Exam Results, Questions & Answers, and Certificate of Attendance Distribution

1215 Course and Workshop Conclusion

*** End of Session ***