

**NUCLEAR MEDICINE**  
**SCHEDULE FOR THE 5TH YEAR MEDICAL STUDENTS**

**Subjects of lectures:**

1. Short history about Nuclear Medicine. Physics of Nuclear Medicine. Radiation Detection and Instrumentation. Single Photon Emission Computed Tomography (SPECT), Positron Emission Tomography (PET).
2. Basics of Radiobiology. Radiation Safety Procedures and Radiation Protection.
3. Production of Radionuclide. Introduction to Radionuclide Diagnostic Procedures In Vivo and Radionuclide Therapy.
4. Nuclear Medicine in Paediatrics Radioisotope, Diagnostic Procedures In Vitro.
5. Positron Emission Tomography: in Oncology, Central Nervous System (CNS) and Cardiovascular System (CVS).  
Perspectives and Advances in Nuclear Medicine.

**The prerequisite requirements for the implementation of the didactic classes at the unit and a way of final evaluation:**

1. Students will be exposed to basic concepts related to the field of nuclear medicine:
  1. The emphasis is on physiologic [as opposed to anatomic] imaging
  2. A brief description of the major equipment (gamma camera, SPECT, PET)
  3. The appropriate use of nuclear medicine as future referring physicians, including therapeutic applications
2. Students should be exposed to the most common exams performed in nuclear medicine:
  - a. Thyroid scan
  - b. Bone scan
  - c. Ventilation perfusion scan (VQ)
  - d. Myocardial perfusion scan
  - e. Renal scan
  - f. Gastrointestinal bleeding scan
  - g. PET scan
  - h. White blood cell [WBC] scan
3. For each scan, Students should learn the following:
  - a. Radiopharmaceuticals
  - b. Mechanism of uptake
  - c. Main indications
  - d. Main contraindication
  - e. What the exam entails
  - f. How to use the results
4. During the Tutorial and clinical practices the teacher will ask the students some questions (short oral questions) related to the subject of the day or previous day.

### **A form of classes' crediting:**

1. A way of evaluation individual labs
2. A way of evaluation seminars
3. A way and a form of final evaluation the whole course at the unit: Only students who attend all the lectures, the seminars and the clinical practices allowed to sit the final exam (quiz). Presence in the lectures, tutorial and clinical practices is obligatory. The exam (quiz) will be in the form of multiple choice questions MCQ.
4. A form of exemption from an exam- there is no exemption from the exam

### **A list of recommended books:**

1. The obligatory books for obtaining a basic knowledge of a subject (max 2 books)
  - Ziessman, O'Malley, Thrall. Nuclear medicine, 3<sup>rd</sup> edition. 2006, ELSEVIER.
  - Taylor Schuster. A clinician's guide to nuclear medicine. 2006.
2. The optional books (max 2 books)
  - European Journal of Nuclear Medicine and Molecular Imaging
  - Nuclear Medicine Review

### **Subjects of Classes:**

#### **I**

1. What is nuclear medicine and nuclear medicine procedures. Radiation safety procedures and radiation protection in Nuclear Medicine Department MUB.
2. Clinical practical: participation in clinical examination of some patients before the injection of radiopharmaceutics and during gamma camera imaging. Indication and contraindication of radionuclide procedures.
3. Thyroid scintigraphy. Pathophysiology and diagnosis of thyroid diseases.

#### **II**

1. Radioiodine therapy of hyperthyroidism and non toxic goitre.  
Follow up of hyperthyroid patients after radioiodine therapy.  
The efficiency of radioiodine therapy in patients with hyperthyroidism and non-toxic goitre
2. Diagnosis and treatment of patients with well differentiated thyroid carcinoma.
3. Parathyroid scintigraphy.
  - Participation in clinical examination of patients and qualification of patients for radioiodine therapy.
  - Interesting clinical cases presentation and examination of some patients.

#### **III**

1. Radioisotope diagnostic procedures in oncology. Clinical PET in oncology
2. Sentinel node procedure: clinical application.
3. Radionuclide therapy in oncology and haematology .
4. Radioisotope diagnostic procedures in infection and inflammation
5. Interactive cases presentations and examination of some patients.

#### IV

1. Radioisotope diagnostic procedures in skeletal system
2. Radioisotope diagnostic and therapeutic procedures in joint diseases. Radiosynovectomy
3. Radioisotope diagnostic procedures in pulmonary embolism.
4. Radioisotope diagnostic procedures in genitourinary system
5. Interesting clinical cases presentations and examination of some patients.

#### V

1. Radioisotope diagnostic procedures in central nervous system (CNS)
2. Radioisotope diagnostic procedures in cardiology
3. Radioisotope diagnostic procedures in gastrointestinal system (GIT bleeding)
4. Interactive cases presentations
5. Participation in clinical examination of some patients before injection of radiopharmaceuticals and during imaging.

For further information please contact Department of Nuclear Medicine (Dr Saeid Abdelrazek)