

## Hospital RESIDENCY – Final training

### 1. language

*English*

### 2. course contents

Coordinator: Prof. Giovanni Gambassi

Year Course: 6th

Semester: First

UFC: 24

Modules and lecturers:

***Internal Medicine VI (5 CFU)*** – Proff. Giovanni Gambassi, Raffaele Manna, Roberto Pola

***Internal Medicine VII-Sport Medicine (1 CFU)*** – Prof. Massimiliano Bianco

***Physics V-Modern Physics (1 CFU)*** – Prof. Gabriele Ciasca

***Radiodiagnostics and Radiotherapy (4 CFU)*** -

*Radiology*: Proff. Riccardo Manfredi, Riccardo Marano, Anna Rita Larici, Roberto Iezzi

*Nuclear Medicine*: Proff. Alessandro Giordano, Vittoria Rufini, Maria Lucia Calcagni

*Radiotherapy*: Proff. Maria Antonietta Gambacorta, Giancarlo Mattiucci, Francesco Cellini

***General Surgery VII (5 CFU)*** – Proff. Sergio Alfieri, Luigi Sofo, Francesco Ardito, Jacopo Romagnoli, Paola Caprino, Alberto Biondi, Andrea Di Giorgio, Giuseppe Quero, Vincenzo Tondolo

Three of the modules combine structured activities of Professional Training

***Internal Medicine Professional Training (2 CFU)*** – 6 groups

Proff. Francesco Franceschi, Angelo Santoliquido, Andrea Flex, Eleonora Nucera, Rosa Liperoti, Rossella Cianci, Antonella Gallo, Francesco De Vito

***Radiodiagnostics and Radiotherapy Professional Training (3 CFU)*** – 6 groups

Proff. Daniela Di Giuda, Lucia Leccisotti, Silvia Chiesa, Nicola Dinapoli, Luca Tagliaferri, Paolo Belli, Luigi Natale, Giacomo Avesani, Carmelo Caldarella, Benedetta Gui, Giancarlo Savino, Annarita Alitto, Stefania Manfrida, Valerio Lanni

***General Surgery Professional Training (3 CFU)*** – 6 groups

Proff. Sergio Alfieri, Maria Vellone, Alberto Biondi, Giuseppe Quero, Claudio Fiorillo, Fausto Rosa, Andrea di Giorgio, Laura Lorenzon, Paola Caprino, Antonio Pio Tortorelli

### 3. bibliography

*Internal Medicine* – All of the documentation presented in classroom, including PPT, PDF, videos, movies, URL, websites etc. should be considered mandatory learning material and it will be made available to the students. The reference textbook for a more systematic learning is “*Medical Diagnosis and Treatment*” – 55 edition Lange, 2016. Although students are encouraged to

consolidate and elaborate the learning from classroom material into more systematically treated textbook chapters, the acquisition of the textbook should only be considered optional.

*Sport Medicine*: Wilson MG, Drezner JA, Sharma S. *IOC Manual of Sports Cardiology*. Wiley-Blackwell, 2016.

Zeppilli P, Bianco M. *The ECG in Sports Medicine*. CESI ed., 2010.

*Physics*: Suzanne Amador Kane: *Introduction to Physics in Modern Medicine*. CRC Press, Taylor & Francis.

*Radiology*: TBC

*Nuclear Medicine*: Fanti S, Lopci E. *Diagnostic Nuclear Medicine and Radionuclide Therapy*. Società Editrice Esculapio

*Radiation Oncology*: Chao KSC, Perez CA, Wang TJC. *Radiation Oncology – Management Decisions*. Wolters Kluwer

*General Surgery*: Sabiston *Textbook of surgery: the biological basis of modern surgical practice*. 20 edition

DP McKellar, RB Reiling, B Eiseman. *Prognosis and outcome in surgical disease - Quality Medical Pub*

#### 4. learning objectives

**Knowledge and understanding** – The integrated course is geared toward the acquisition of the following knowledge and understanding:

Integrated clinical care and management in emergency, sub-intensive, acute, continuing and transitional care

Physiology and pathophysiology of physical exercise and sport activities

Value and prescription of physical exercise in normal and pathological conditions

Fundamental physical principles underlying medical technologies and their applications in clinical practice

Appropriate use of diagnostic techniques, findings interpretation and integration into patient management.

Knowledge of modern Radiation Oncology techniques applied to the treatments of malignant neoplasms

Modern surgical care: indications, decisions, timing, strategies, approaches, techniques, complications

**Applying knowledge and understanding** – The students will learn how to apply and connect the knowledge to the understanding and applying them in the management of the most common clinical scenarios in the emergency, sub-intensive, acute, continuing and transitional care settings.

**Making judgements** – The students will develop abilities on how to autonomously make judgments and take decisions when facing the integrated clinical care and management of patients in diverse clinical scenarios. More specifically, the students will learn how to develop a list of differential diagnoses and to elaborate on the different elements that disregard some hypotheses, make some less likely and instead lend support to others. The students will then develop the ability to strategize the approach to get to a conclusive diagnosis or to the choice of different therapeutic strategies.

**Communication skills** – The students will acquire the skills to illustrate critically clinical cases in the context of multidisciplinary teams. Furthermore, the students will become able to communicate care processes, clinical decisions as well as how to privilege patient-centered and value-based clinical care. The students will also learn how to present and contextualize risks and benefits of the different, modern diagnostic techniques, therapeutic approaches and surgical strategies.

**Learning skills** – The students will develop and mature abilities about how to consolidate and extend the breadth and depth of knowledge and learn about continuing medical education and how to stay atop in the rapidly evolving field of biomedical science. To this end, the students will master the search and evaluation of evidence from textbooks, articles as well as by using online platforms, programs and web-based applications.

#### 5. PREREQUISITES

The students are requested to have background knowledge of physiopathology and of common clinical signs and symptoms, and an understanding of the most prevalent medical diagnoses along with basic clinical pharmacology. It is a prerequisite to also being able to describe principal diagnostic techniques and therapeutic options. As a general prerequisite, the students must have passed all the exams of the previous years.

#### 6. teaching methods

The course will consist of traditional classroom lectures, case-based learning, interactive learning, E-learning and self-study along with autonomous and tutor-guided professional training in the diverse clinical units.

**Knowledge and understanding** – During classroom teaching the students will be stimulated to recapitulate the formerly acquired individual knowledges to go above and beyond and translate them into a new level of integration.

**Applying knowledge and understanding** – Either in class but even more specifically during the professional training, the students will be facilitated in the application of such level of integrative understanding to a complete and organic disentangling of uniquely complex and interconnected clinical scenarios.

**Making judgements** – Either in class but even more specifically during the professional training, the students will be asked to proactively participate in the clinical decision making at every step in the diagnostic and therapeutic management of the most common clinical scenarios. The students will be encouraged to confront with real clinical cases and with patients directly when indicated.

**Communication skills** – Students will be requested to play an active role during classroom teaching with questions and answers as well as in role-playing scenarios. During the professional training activities the students will be stimulated to present and discuss real clinical cases, to use the most appropriate scientific language and to nurture communication abilities in direct connections with patients.

**Learning skills** – Above and beyond the classroom teaching and the hands-on experience in the professional training, the students will be requested to take any opportunity for a more in-depth and systematic study of any of the relevant didactic content.

#### 7. other informations

None

#### 8. methods for verifying learning and for evaluation

The exam will be based on a cumulative written test with multiple-choice questions (MCQ) concerning all teaching modules. Some MCQ will explore a specific knowledge with a traditional format. For Internal Medicine and General Surgery, MCQ will be introduced by a clinical scenario and can include a series of questions as the case evolves in subsequent steps mimicking clinical reality.

**Knowledge and understanding** – The use of a written MCQ test will allow the possibility to verify the ability of the student to go above and beyond individual, separate knowledges and to translate them into a new level of clinical integration.

**Applying knowledge and understanding** – The utilization of real clinical scenarios will facilitate the application of such level of integrative understanding and will provide an estimate of the ability of a student to complete a disentangling of uniquely complex and interconnected clinical scenarios.

**Making judgements** – The use of a test with a series of MCQ in subsequent steps as the clinical case evolves will provide a mean to assess the student's clinical decision making at every step in the diagnostic and therapeutic management of the most common clinical scenarios.

**Communication skills** – The clinical cases presented will include role-playing scenarios. The test will verify the use by the student of the most appropriate scientific language and the communication abilities as in direct connections with patients.

**Learning skills** – The MCQ test will serve as mean to assess the ability of the student to complete a more in-depth and systematic study of any of the relevant didactic content.

The number of MCQ will be proportional to the number of CFU/hours of each teaching module with a distribution by discipline based on total CFU (average 6-7 per each CFU). The test is comprised of a total of 98 MCQ with a maximum time allocated of 180 minutes. Altogether, the final test will include:

- 30 MCQ for INTERNAL MEDICINE
- 7 MCQ for SPORT MEDICINE
- 7 MCQ for PHYSICS
- 30 MCQ for GENERAL SURGERY
- 24 MCQ for RADIODIAGNOSTICS subdivided in
  - 8 MCQ for RADIOTHERAPY
  - 8 MCQ for NUCLEAR MEDICINE
  - 8 MCQ for RADIOLOGY.

One and only will be the correct choice for each quiz. To pass, the student should reach a threshold of correct answers above 50% in each discipline. More specifically, the thresholds will be the following: INTERNAL MEDICINE at least 16 correct (53%), SPORT MEDICINE at least 4 correct (57%), PHYSICS at least 4 correct (57%), GENERAL SURGERY at least 16 correct (53%), RADIOTHERAPY-NUCLEAR MEDICINE-RADIOLOGY at least 13 correct (54%).

The final vote will be derived based on the number of correct answers along the scheme below

53-54	18
55-56	19
57-59	20
60-62	21
63-65	22
66-68	23
69-71	24
72-75	25
76-80	26
81-84	27
85-88	28
89-91	29
92-94	30
95-98	30 L

9. program

### **Internal Medicine**

#### Grand Rounds

Recurrent venous thromboembolism and pulmonary artery aneurysm  
Headache, abdominal pain, anemia and thrombocytopenia  
Headache and difficulty speaking  
Multiple myeloma, skin tightness, arthralgias, edema  
Headache, fever, stiff neck  
Nausea, vomiting and confusion  
Chest pain, dyspnea and rash  
Cardiomyopathy and recurrent ventricular tachycardia  
Vision disturbances and headache  
Post-partum dyspnea and hypoxemia  
Recurrent fever syndromes  
New onset seizures  
Fever, hypotension and hypoxemia  
Hypercalcemia and renal failure  
Back pain, fatigue, weight loss, knee swelling

Dyspnea and leg edema  
Pleural effusion  
Somnolence after orthopedic surgery  
Abdominal pain, syncope and hypotension  
Weight loss, abdominal pain and diarrhea

### Tumor Boards

- 1 Prostate and anal cancer
- 2 Esophageal cancer
- 3 Bone tumor

### **Sport Medicine**

- Physiology and pathophysiology of different kinds of physical activity and sport, with focus on cardiovascular system.
- Epidemiology and causes of sudden death in the athlete. Considerations on preventive measures.
- Physical activity and sport in patients with different pathological conditions of internal medicine interest.
- Notes on doping (and anti-doping): rules, effects on sports performance, side effects.

### **Modern Physics**

- Introduction: particles, waves and the dual nature of light
- Elementary constituents: photons, electrons, positrons, protons, neutrons. Electronic shell structure of atoms
- Particle interaction with matter: Bethe-Bloch, radioactive, photoelectric effect, Compton scattering, pair production
- Methods of X-ray generation: X-ray tubes, radioactive sources, electron accelerators. Computer tomography (CT)
- Cyclotron, isotopes in medicine, Positron Emission Tomography (PET), Single Photon Emission Computer Tomography
- Nuclear Magnetic Resonance: magnetic field, magnetic moment, magnetization, relaxation times: T1, T2 and T2\*

### **Radiodiagnostic and Radiation Oncology**

#### Radiology

- Non-invasive Cardio-Vascular Imaging
  - Imaging Modality
  - Radiological Anatomy: vascular mediastinum; thoracic & abdominal aorta; heart & coronary arteries;
  - Clinical Applications: emergency radiology; non-emergency radiology
- Chest Imaging
  - Imaging Modality
  - Radiological Anatomy: chest wall; lungs; non-vascular mediastinum; airways; pulmonary & bronchial arteries;
  - Clinical Applications: emergency radiology; non-emergency radiology.
- Abdominal Imaging & Interventional Radiology
  - Imaging Modality
  - Radiological Anatomy: upper abdomen; lower abdomen
  - Clinical Applications: emergency radiology; non-emergency radiology
- Interventional Radiology: procedures; indications.

#### Nuclear Medicine

- Principles of Nuclear medicine: diagnostics and therapy with radionuclides
- Nuclear Medicine in Oncology
- Nuclear medicine diagnostics and therapy in endocrinology
- Nuclear Medicine in lung diseases
- Nuclear Medicine in brain diseases
- Nuclear Medicine in heart diseases and appropriate use of diagnostic methods using ionizing radiations

#### Radiation Oncology

- General principles of modern Radiation Oncology
- Technological evolution in Radiation Oncology for target identification and treatment planning
- Technological evolution in Radiation Oncology in the delivery phase
- Radiation Oncology in the head-neck malignancies
- Radiation Oncology in the thoracic malignancies

- Radiation Oncology in the upper gastro-intestinal malignancies
- Radiation Oncology in the pelvic malignancies

### **General Surgery**

Achalasia of the esophagus: medical treatment vs operative treatment  
 Esophageal perforation: non operative, drainage, repair, other  
 Esophageal diverticulum: treatment options  
 Gastroesophageal reflux disease in adults: surgical therapy  
 Barrett's esophagus: operative management  
 Esophageal carcinoma: staging and multimodal therapy  
 Gastric ulcer: treatment of complications  
 Gastric carcinoma: staging and surgical treatment  
 Duodenal ulcer: treatment of complications  
 Gallstones: differential diagnosis, complications and surgical treatment  
 Adult obstructive Jaundice: differential diagnosis, complications and surgical treatment  
 Choledochal cyst: Todani Classification, treatment  
 Cholangiocarcinoma and sclerosing cholangitis: Differential diagnosis and surgical treatment  
 Acute pancreatitis: Step-up approach  
 Pancreatic and periampullary carcinoma: differential diagnosis and surgical treatment  
 Liver abscess: treatment options  
 Splenic trauma: indications and timing for surgical treatment  
 Apache II and ASA score to predict post operative mortality in elective laparotomy  
 Small bowel obstruction: differential diagnosis and treatment options  
 Crohn's disease: differential diagnosis and surgical treatment options  
 Ulcerative colitis: differential diagnosis and surgical treatment options  
 Diverticulitis of the colon: differential diagnosis and surgical treatment options  
 Large Bowel obstruction: differential diagnosis and treatment options  
 Volvulus of the colon: option treatment  
 Appendicitis: differential diagnosis and treatment options  
 Colon polyps: indication for surgical treatment  
 Colon carcinoma: indication for surgical treatment and options technique  
 Rectal carcinoma: surgical treatment vs no surgery: indications and options technique  
 Anal Carcinoma: surgery vs no surgery  
 Anorectal abscess, fistula, in ano, pilonidal disease: surgical treatment  
 Adult groin hernias: different surgical techniques related to recurrence