

## MATERNAL AND CHILD HEALTH RESIDENCY (ML0153)

### 1. language

English

### 2. course contents

Coordinator: Prof. ROSANNA APA

Year Course: 4th year

Semester: 2nd semester

UFC: 19

Modules and lecturers:

- CLINICAL GENETICS I (ML0154) - 1 cfu - ssd MED/03

Prof. Maurizio Genuardi, Marcella Zollino

- EMBRYOLOGY (ML0159) - 1 cfu - ssd BIO/17

Prof. Alessio D'Alessio

- OBSTETRICS AND GYNECOLOGY (ML0155) - 6 cfu - ssd MED/40

Prof. Rosanna Apa, Sara De Carolis, Chiara Tersigni, Anna Fagotti, Paola Villa, Giovanni Scambia, Francesco Fanfani, Antonia Carla Testa, Maria Gabriella Ferrandina, Nicoletta Di Simone, Anna Franca Cavaliere, Giorgia Garganese, Anna Tropea

- OBSTETRICS AND GYNECOLOGY PROFESSIONAL TRAINING (ML0161) - 3 cfu - ssd MED/40

Prof. Paola Villa, Giorgia Garganese, Anna Tropea, Maria Gabriella Ferrandina, Francesco Fanfani, Anna Fagotti, Sara De Carolis, Anna Franca Cavaliere, Rosanna Apa, Giovanni Scambia, Chiara Tersigni, Antonia Carla Testa, Sergio Ferrazzani

- PEDIATRIC NEUROPSYCHIATRY (ML0158) - 1 cfu - ssd MED/39

Prof. Eugenio Maria Mercuri, Domenica Immacolata Battaglia, Stefano Vicari

- PEDIATRIC SURGERY (ML0156) - 1 cfu - ssd MED/20

Prof. Lorenzo Nanni

- PEDIATRICS (ML0157) - 3 cfu - ssd MED/38

Prof. Chiara Leoni, Giovanni Vento, Stefano Mastrangelo, Angelica Bibiana Delogu, Giuseppe Zampino, Francesca Gallini, Donato Rigante, Rita Paola Maria Luciano

- PEDIATRICS PROFESSIONAL TRAINING (ML0160) - 3 cfu - ssd MED/38

Prof. Angelica Bibiana Delogu, Roberta Onesimo, Francesca Gallini, Simonetta Costa, Donato Rigante, Rita Paola Maria Luciano, Antonio Gatto, Giuseppe Zampino, Giovanni Vento, Luca Tortorolo, Stefano Mastrangelo, Antonio Ruggiero

### 3. bibliography

Williams Obstetrics, 23e.F Gary Cunningham, Kenneth J Leveno, Steven L Bloom, John C Hauth, Dwight J Rouse, Catherine Spong (mandatory)

Williams Gynecology, Third Edition 3rd Edition. by Barbara Hoffman (Author), John Schorge (Author), Karen Bradshaw (Author), Lisa Halvorson (Author), Joseph Schaffer (Author), Marlene, M. Corton (Author) (mandatory)

Fetology: Diagnosis and Management of the Fetal Patient, Second Edition 2nd Edition. Diana Bianchi, Timothy Crombleholme, Mary D' Alton, Fergal Malone

Moore K.L., Persaud T.V.N, Torchia M.G. The Developing Human. Clinically Oriented Embriology, 11th Edition, Elsevier Saunders (mandatory)

Langman's Medical Embriology TW Sadler

Schoenwolf, G.C., Bleyl, S.B., Francis-West P.H. Larsen's Human Embryology, 4th Edition. Elsevier Churchill Livingstone (mandatory)

Nelson's Textbook of Pediatrics, Latest Edition, Saunders publisher, edited by behrman, Kliegman, Jenso (mandatory)

Firth HV, Hurst JA OxfordDesk Reference: Clinical Geneticsand Genomics. 2nd Edition ( Clinical Genetics) 2017 (mandatory))

Arensman RM, Bambini DA, Almond PS-Pediatric surgery vademecum-Landes Biosciences. The vademecum is intended for possible consultation of the chapters concerning only the topics that have been explained during the lessons. It is NOT necessary for the students to read the book, provided they have attended the lessons.

#### 4. learning objectives

The course of Maternal and Child Health residency focuses on maternal and fetal/child/ girl/woman health starting from embryological development. In this long "way" from prenatal to adult life, different aspects of these broad medical fields will be explored and discussed in depth and infact several are the specialists involved in such course. For each studied argument, will be provided the concepts of physiology, disease etiology, pathogenesis, diagnosis, management, treatment and prevention. In this way we hope to offer to the students all the necessary tools to proper evaluate and treat fetus, children and mothers from diffent point of wiew.

The gynecologists/obstetrics will give important informations for what concerns physiological pregnancy, diagnostic and therapeutic options in gynecologic and obstetric diseases. Furthermore students will become familiar with congenital malformations, fetal diagnosis, therapy and postnatal treatments. They will also know how to manage a gynecologic patient, how to reconnaise a normal menstrual cycle or various hormone-related pathologies (like PCOS, amenorreha, in some cases menorrhagia) or anatomy-related (myomas, ovarian cystes) diseases. Obviously also the oncological field will be viewed and analysed from the diagnosiys to therapy.

For what concerns the module of pediatric surgery the students are expected to meet the following objectives: to know the most common congenital malformations affecting the gastrointestinal, respiratory and urinary tract together with those regarding the external genitalia. To know how to make diagnosis by using appropriate imaging tools and to acknowledge the appropriate surgical correction procedures.

In pediatric neuropsychiatry, the course will offer the means to interpret clinical neuropsychiatric signs in the baby/child in order to make an early diagnosis and therefore to program the correct therapeutic options.

Finally the pediatric course will provide the students a series of informations necessary to understand, evaluate and treat both healthy and sick children. In the pediatric unit the students will have the opportunity to observe a wide range of different morbidities including neoplastic and hematologic diseases.

Of fundamental importance is the genetic contribution in the management of syndromic disabilities and in tumor cases. Their contribution is useful also to identify opportunities, limitations and risks of prenatal diagnosis and genetic disease tests.

Finally, embryology is necessary to apprehend the embryological development of the early prenatal stage, the fetal and placental development and physiology.

#### ***Conoscenza e capacità di comprensione - Knowledge and understanding (Dublino 1)***

At the end of this course, each student should show a good knowledge regarding the phisyology and the pathology of all treated arguments. He should know about female, maternal, fetal and neonatal physiology and pathophysiology. He should know about advanced diagnosis and treatment in neuropsychiatric disorders. In pediatric surgery the students are requested to know the most frequent congenital and acquired conditions characterizing pediatric surgery and to understand the mechanisms of their clinical

presentation. For what concerns genetic the student should:

- a) be able to recognize clinical markers of hereditary breast and ovarian cancer; genetic forms of infertility; genetic forms of neurodevelopment disorders and physical anomalies in children
- b) have a general knowledge on the different types and aims of genetic tests
- c) be able to understand the applications and limits of prenatal genetic tests as well as the associated ethical issues

**Conoscenza e capacità di comprensione applicate – Applying knowledge and understanding (Dublino 2)** At the end of this course, each student should be able to recognize the physiology/pathophysiology in each of the examined focus. His ability in making a right diagnosis will be demonstrated by the proper use of diagnostic techniques, finding interpretations and integrations into patient management. In addition his knowledge from the physiology to the pathology, from the diagnosis to the treatment, his knowledge of the most proper and modern surgical techniques will be very important tools for the management of the patient for what concern the indications, decision, timing, strategies, approaches, techniques and risks.

**Autonomia di giudizio - Making judgements (Dublino 3)** The students should develop judgment skills and decisional abilities when facing the integrated clinical care and management of patients in different clinical scenarios. In front of the patient they will be able to perform differential diagnosis and to elaborate among different elements that disregard some hypotheses, make some less likely and instead bring support to others. Therefore the students will develop the ability to individuate the conclusive diagnosis and the choice of the right therapeutic strategies. Besides choosing the right therapeutic strategies they should also acquire the ability to discuss patient concerns and expectations.

**Abilità comunicative – Communication skills (Dublino 4)** The course will promote student's communication skills in various medical context including patient exposure and scientific audience. They will need to demonstrate their abilities in elaborating information from multiple sources and to synthetically express complex concepts.

**Capacità di apprendere – Learning skills (Dublino 5)** By the end of the course students will have expanded their study skills and strategies aimed at multi-source, self-directed and ongoing learning. In particular, they will gain the capacity to deepen and update their knowledge by capitalizing on scientific literature and on use of web-based electronic databases allowing the assimilation of most updated informations.

## 5. PREREQUISITES

Key course prerequisites include knowledge of the fundamentals in: basic sciences, anatomy, physiology, pharmacology, internal medicine, basic principles of general surgery. As a general prerequisite the students must have passed all the exams of the previous years.

## 6. teaching methods

The teaching methods will be based on: interactive frontal lessons, discussion of clinical cases and professional trainings in the different clinical wards

**Conoscenza e capacità di comprensione - Knowledge and understanding (Dublino 1):**

During both frontal lessons, clinical case discussion and clinical professional training, the teachers will clearly explain the main topics also with the aid of pictures and videos. Teachers will also try to stimulate an active participation by the students in order to ameliorate their observational and deductive skills.

**Conoscenza e capacità di comprensione applicate – Applying knowledge and understanding (Dublino 2):** It is important to encourage an active participations of the students during the frontal lessons but especially in the clinical “meeting” where thanks to their small assortments in each clinical professional training group, they can exploit valuable insight throughout. Infact during the professional training the teacher has a direct approach with the students answering to the questions but also discussing with them the different implications and clinical possibilities available. Similarities and general rules linking the different conditions are underlined and explained in order to favour immediate understanding and memorization.

**Autonomia di giudizio - Making judgements (Dublino 3):** By means of clinical case presentation, the course promotes students to reorganize their acquired knowledge into critical judgments based on the causes and processes underlying patient diseased conditions, the organ/system involved, the related genetic counseling issues.

**Abilità comunicative – Communication skills (Dublino 4):** During lessons, the clinical case discussions should allow students to discuss with the teacher and their classmates using appropriate scientific language. If the terms used are incorreceted the teacher must provide the student with appropriate scientific language.

**Capacità di apprendere – Learning skills (Dublino 5):** Self-learning is supported by lessons and at the end of them, through referral to original scientific literature, PUB med keywords and on-line materials.

#### 7. other informations

Obstetrical training experiences at the “Gemelli training Center”. The students will have the opportunity to learn and practice in a safe environment, in small groups and with dedicated facilities. Medical students will be assigned to the “simulation Center” with the opportunity to learn clinical procedures such as phisiological vaginal delivery, the use of the vacuum, foley insertion, cesarian section and suturing, shoulder dystocia and breeech delivery.

Moreover 7 seminars will be offered to the students to deepen their knowledge on various fields. These seminars will be held by renowned experts.

#### 8. modalità di verifica dell'apprendimento/ methods for verifying learning and for evaluation

Methods for verifying learning are the following.

- 1) Ongoing: Interactive frontal teaching with class involvement.
- 2) Final written exam. A written multiple choice test covering the entire content of the course will be held to evaluate the students' knowledge and comorehension. Most question items are presented as short clinical vignettes that aim to assess thestudent's capacity not only to retrieve knowledge but also to utilize information in real-life situations, and to demonstrate the student's critical evaluation and judgment skills.

The test consists of 70 multiple choice questions, to do in 1 hour, divided as follows:

- Genetics: 6/4
- Embryology: 6/4

- Neuropsychiatry: 6/4
- Pediatric Surgery: 6/4
- Gynecology: 32
- Pediatrics: 18

To pass the exam the student has to have at least 50% of correct answers in each discipline.

The score is expressed in thirtieths.

Final score will be calculated based on the number of correct answers according to the scheme below:

Number of correct answers	Final score
68-70	30/30 <i>cum laude</i>
67	30/30
66	29/30
64-65	28/30
61-63	27/30
58-60	26/30
55-57	25/30
52-54	24/30
49-51	23/30
46-48	22/30
43-45	21/30
40-42	20/30
37-39	19/30
36	18/30
35	Failed

## 9. program

### CLINICAL GENETICS I (ML0154):

- Hereditary breast and ovarian cancer: genetic bases, genetic counseling and testing, risk assessment, cancer prevention options for individuals at increased risk.
- Genetic causes of male and female infertility: sex chromosome anomalies, consequences of structural chromosome rearrangements, chromosome Y microdeletions, obstructive azoospermia and abnormalities of the CFTR gene. Premature ovarian failure: FMR1 gene premutations.
- Prenatal diagnosis and testing. Indications to prenatal diagnosis of genetic disease. Methods and limits of prenatal genetic diagnosis. Non invasive prenatal testing.
- Floppy infant: genetic basis and methods for the genetic diagnosis
- Genomic abnormalities in epileptic encephalopathies
- Syndromic forms of neurodevelopmental disorders and physical anomalies.

## **EMBRYOLOGY (ML0159):**

Introduction to human development and developmental periods. Stage of embryonic development. Normal and abnormal gametogenesis. Structure of the gonads. Phases of fertilization. Implantation and second week of development. Gastrulation and formation of the trilaminar embryonic disc. Derivative of germ layers. Birth defects. Placenta, umbilical cord and fetal membranes, chorion, amnion, umbilical vesicle and allantois. Umbilical cord stem cells. Development of placenta and its functions. Placental abnormalities. Placenta as an allograft. Placenta as an invasive tumor-like structure. Placenta and fetal membranes after birth. Amnion and amniotic fluid. Disorders of the amniotic fluid. Premature rupture of fetal membranes. Multiple pregnancies. Uterine growth during pregnancy. Intrauterine growth restriction. Maternal diabetes.

## **OBSTETRICS AND GYNECOLOGY (ML0155):**

- Ovarian Cancer: clinical presentation, diagnosis
- Ovarian Cancer staging and treatment
- Rare ovarian tumors
  
- Prenatal diagnosis: counseling, invasive e non invasive methods (villocentesis, amniocentesis, obstetrical ultrasound, screening tests)
- Fetal therapy and Congenital anomalies
- Clinical teratology: Drugs, chemicals, radiation exposure and pregnancy
- Preconceptional counselling, screening tests and vaccination. Periconceptional Folic Acid
- Preterm labor and deliver
- Placenta: anatomy and physiology.
- Placental abnormalities
- Gestational trophoblastic neoplasia
- Uterine cervical cancer: prevention
- Uterine cervical cancer: clinical presentation, diagnosis, staging, algorithms of treatment
- Uterine sarcomas
- Physiology of the mammary gland and breast cancer surveillance
- Selection criteria and surgical technique in breast cancer surgery
- Vulvar cancer work-up, surgical staging and treatment
- Benign endometrial and tubal pathology. Polyp.
- Ovarian masses: benign and malignant ovarian masses. Definition, Classification, Pathogenesis, diagnosis, clinical symptoms, medical and surgical treatment
- Acute and chronic salpingitis: Pathogenesis, diagnosis, clinical symptoms, medical and surgical treatment
- Management of patients with irregular bleeding

- Uterine malformations: Classification, Epidemiology and Diagnosis
- Diagnostic ultrasound in gynecology
- Gynecological Screening and prevention: Pap test, Colposcopy, HPV test, HPV vaccination
- Markers and genetic tests in gynecology
- Anatomy of pelvic organs: surgical implications
- Gynecological cancer and fertility: when we can spare?
- Endometrial cancer: clinical presentation, diagnosis, staging and treatment
- Gender medicine and personalized medicine
- New tools in gynecology
- Physiology of pregnancy
- Post-term pregnancy
- Caesarean section
- Obstetric hemorrhage
- The puerperium
- Recurrent pregnancy loss
- Premature rupture of the membranes
- Pregnancy related hypertension
- Thyroid disease and pregnancy
- Rheumatologic and connective tissue disorders
- Adolescence: irregular cycles, premature and delayed puberty, disorder of sex development, fertility preservation in oncologic adolescent patients
- Menopause: diagnosis, menopausal transition, symptoms, metabolic changes, clinical evaluation of cardiovascular and other disease risks
- Menopausal Hormone Therapy: MHT benefits and risk
- Premature ovarian failure: physiologic and iatrogenic premature menopause clinical issues
- Postmenopausal osteoporosis: diagnosis and treatments
- Ectopic pregnancy
- Uterine myomas
- Endometriosis
- Menstrual cycle: physiology of the normal menstrual cycle, evaluation of the menstrual cycle and timing of ovulation
- Ovulation induction
- Chronic and acute pelvic pain : pathogenesis, diagnosis, clinical symptoms,

medical and surgical treatment

- Primary and secondary amenorrhea: epidemiology, causes, evaluation and management
- Infertility in male and female. Causes and treatment. Unexplained infertility
- Polycystic ovary syndrome (PCOS): definition, pathophysiology and etiology, diagnosis, clinical features and manifestations, differential diagnosis and treatment.

#### **PEDIATRIC NEUROPSYCHIATRY (ML0158):**

- Epilepsy
- Movement Disorders
- Autism
- ADHD

#### **PEDIATRIC SURGERY (ML0156):**

- Congenital malformations of the urinary tract: uretero-pelvic junction obstruction, uretero-vesical junction obstruction, posterior urethral valves, vesico-ureteral reflux
- Neurogenic bladder: diagnosis, medical and surgical treatment
- Abdominal wall defects: omphalocele, gastroschisis
- Congenital malformations of the gastrointestinal tract: esophageal atresia and tracheoesophageal fistula; duodenal, jejuno-ileal and colonic atresia, pyloric stenosis, intestinal malrotation and volvulus, imperforate anus, Hirschsprung's disease
- Congenital malformations of the respiratory tract: congenital diaphragmatic hernia (including Morgagni hernia and eventration of the diaphragm); CPAM congenital pulmonary airway malformations (congenital lobar emphysema, bronchogenic cysts, congenital cystic adenomatoid malformation, intralobar and extralobar pulmonary sequestration)
- Hypospadias and disorders of sex development: classification and surgical techniques for the correction; key signs to recognize the newborn affected by a disorder of sexual development and schematic diagnostic workup
- Undescended testis and hernias in newborns and infants: diagnosis, timing and indications for surgical correction



- Varicocele, phimosis and congenital defects of the male external genitalia: clinical evaluation; indications to correction, available techniques
- Acute abdominal and scrotal pain in the infant and in the child: evaluating the underlying causes, the diagnostic tools and the available treatments

#### **PEDIATRICS (ML0157):**

- Congenital heart diseases with cyanosis
- Congenital heart diseases with heart failure
- Rheumatic fever
- Juvenile idiopathic arthritis
- Henoch Schonlein purpura
- Kawasaki disease
- Allergic diseases
- Artificial nutrition
- Follow-up of preterm infants
- Respiratory distress syndrome
- Neonatal sepsis
- Neonatal jaundice
- Vertically transmitted infections
- Feto-maternal transition
- Preterm resuscitation
- The children with birth defects
- Down syndrome
- Growth disturbances
- Gastroenteritis, gastroesophageal reflux
- Immunizations, exanthema
- Diabetes

- Asthma, croup/epiglottitis
- Anemia
- Healthy and pathological newborn
- Feto-maternal transition, hypoxic-ischemic encephalopathy
- Rooming-in, breast-feeding
- Neonatal screening
- Meningitis, Encephalitis, febrile seizures
- Celiac disease
- Leukemia
- Solid tumors
- Bronchiolitis, pneumonia
- Urinary tract infection. Nephritis/nephrosis
- Enuresis
- Child abuse, enuresis